

URBAN TRANSITIONS FOR CLIMATE JUSTICE

A comparison of the ecological justice of two approaches to urban planning that addresses climate change: The Transition Movement and Smart Cities

A thesis submitted in partial fulfilment
of the requirements for the Degree of
Master of Policy and Governance

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2019

Cities and urban communities are facing some of the most significant impacts of climate change. In the coming years, these impacts on transport, housing, food security and the natural environment will have profound adverse effects on people and planet. Against this challenging backdrop, this research asks: in what ways and to what extent can urban policy and planning to address climate change also foster and advance ecological justice?

This thesis identifies three principles of ecological justice: participation, recognition and capabilities. These principles are used to examine the Transition Movement and the Smart Cities approach to urban planning. This is achieved through an in-depth literature review, a case study analysis of both urban planning approaches, and six indicative interviews with community advocates and local government representatives.

This thesis argues that while neither approach truly satisfies the criteria for ecological justice, the Transition Movement's community-based approach tends to emphasise comparatively higher levels of engagement, participation and recognition. The rights and protections of non-human life and the natural environment need to be significantly strengthened in both planning approaches if genuinely fair and just ecological outcomes are desired.

*Dedicated to all of those who encouraged and inspired my political conscience and
environmental awareness*

ACKNOWLEDGEMENTS

There are many people I would like to acknowledge for their support and contributions during the writing of this thesis. Firstly, I would like to thank Associate Professor Bronwyn Hayward and Dr Pascale Hatcher for their highly-valued guidance, feedback and supervision. Same too for all the staff within the Political Science and International Relations Department here at the University of Canterbury. I'd also like to acknowledge the support of all the people I had the pleasure of sharing an office with on the 5th floor. You all filled this journey with laughter and support, and I will always be grateful to you for that.

I thank the University of Canterbury for awarding me the F A Hayek Scholarship in Economics or Political Science. Thanks also to Alan Gibbs who generously founded the scholarship in 1994. This scholarship enabled me to give my full attention to my studies, something that I know is very rare for many students in the current economic climate. I will always be very fortunate and grateful to have been funded for the duration of this research.

I would also like to acknowledge the people who generously gave up their time to participate as interviewees for this thesis. The insights gained from your interviews was invaluable in validating my findings and in offering very thoughtful and considered contributions.

Finally, thanks to all my family and friends. From shared dinners, weekly catch-ups, barbeques at Tuahiwi and the odd day or two at the beach, your time and support is something I will be forever grateful for. Special mention to my parents, Angela and Craig, and my brother, Alex. You, alongside my wonderful grandparents, Nan and Allan, provided a loving support network I could not have done without.

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1 CHAPTER ONE: URBAN PLANNING FOR A CHANGING CLIMATE

1.1 INTRODUCTION

Our planet's climate is changing at an alarming and unprecedented rate (IPCC 2018). The risks that climate change poses to cities have become increasingly apparent, including rising sea levels, temperature extremes, and an increase in the severity and frequency of extreme weather events (IPCC 2018). For cities and urban areas, this will likely result in poorer health outcomes, damaged infrastructure, disrupted transport routes, strained medical facilities and increased demand on materials, equipment and electricity (Jabareen 2013).

The most significant recent report by the Intergovernmental Panel on Climate Change (IPCC) delivered a stark message to the citizens and political leaders of our world. If we do not take urgent action on climate change by as early as 2030, 1.5 degrees Celsius of warming could be all-but inevitable (IPCC 2018). The current rate of warming, which is likely to accelerate given the current emissions projections, will see about 0.2 degrees Celsius of warming every ten years (IPCC 2018). Furthermore, land and arctic regions will experience 2-3 times higher levels of warming (IPCC 2018). The latest report also addressed the difference that 1.5 and 2 degrees Celsius of warming would have on people and planet. It found that several hundred million extra people would be put into poverty if warming reaches 2 degrees Celsius above preindustrial levels (IPCC 2018).

The effects of climate change will have a significant impact on cities (IPCC 2018). Few communities or cities are likely to escape them, but some will be more adversely affected than others (Rodriguez 2009). Some urban areas may prosper initially as climates potentially become more hospitable, however even these positive changes will disrupt economic activity and endanger many types of flora and fauna (Severson & Coleman 2015). The detrimental effects will likely be more widespread and impactful. Rising sea levels threaten all coastal communities, while contaminant leeching and destructive land-use threatens agricultural production and environmental security. Biodiversity loss and habitat destruction puts non-human life at risk, and natural disasters will continue to become more frequent and powerful (Hayward 2017; IPCC 2014; Leichenko 2011; Maslin 2015). As centres of social, political and economic activity, cities are central to climate change planning for both mitigation and adaptation. Research has demonstrated that cities account for over 70 percent of global energy-related carbon dioxide emissions, despite using only around two percent of the world's land area (Nordbo et al. 2012).

Cities will need to adapt and mitigate the effects of climate change to protect their social, economic and environmental value (Leichenko 2011). Often as the oldest and most entrenched human environments, cities are commonly positioned in places that are particularly vulnerable to climate change (Newman, Beatley & Boyer 2009). As historical centres of sea trade and economic activity, cities are frequently coastal or situated near large rivers, putting them more at risk of sea level rise and flash flooding (Solecki, Leichenko & O'Brien 2011). Despite the relative affluence that cities have over rural areas, their dense populations and often sub-standard infrastructure (brought about in part by rapid urban growth and migration) make them especially vulnerable to climate change (Bulkeley et al. 2010a).

The challenges of climate change for urban centres, governments, policymakers and communities are therefore vast, particularly as the contested urban politics of climate change make it challenging to take meaningful action (Dewulf 2013; Hamilton 2010; Jang & Hart 2015). However, an increasingly large and mobilised proportion of society is becoming climate-conscious (Capstick et al. 2015). Voting for green policies is one way to effect change and build a climate conscience; however, relatively short electoral cycles and self-interested officials can hinder real and sustained action over the long term (Hamilton 2010). Change on the individual level is often reduced to consumer behaviour and financial decisions, lacking the depth and social awareness required of wider change (Kenis 2016). Urban planning approaches to climate change can avoid these issues, where cities, local governments and urban communities plan and adapt to climate change across sectors and over time, with a strong potential in incorporate other vital elements for human flourishing such as civic participation and personal capabilities (Shi et al. 2016). As key emitters of greenhouse gases like carbon dioxide, there is also an imperative on urban areas to plan and adapt to climate change, should global targets be met (Shi et al. 2016).

However, adapting to climate change in cities also requires us to consider issues of fairness and justice. As climate change adaptation and mitigation is a complex challenge that weaves between social, environmental, cultural and economic systems, a holistic approach to urban planning that considers people and planet is required. Future urban planning around climate change needs to consider issues of justice such as: who might be left out of these planning processes? Are environmental risks and hazards fairly distributed between people and environments? Which human or ecological communities are at the greatest risk? A failure to plan around these issues of fairness, justice and equity will result in an increased risk of disease, illness and malnutrition for the most vulnerable communities, and habitat loss or extinction for non-human life (IPCC 2018).

A failed attempt to adapt or mitigate climate change in urban areas can also be just as damaging to human and non-human communities (Shi et al. 2016). Maladaptation often results in benefits for one community, while the conditions of another worsen (Shi et al. 2016). Examples of maladaptive practices for urban planning around climate change include displacing environmental pressures onto other neighbouring systems or failing to use local knowledge in climate planning (Magnan 2014). Therefore, maladaptive planning and a failure to plan are both ways in which urban communities could suffer if issues of justice and fairness are not adequately considered in climate change planning.

1.2 RESEARCH DESIGN

1.2.1 Research Question

Against this challenging context, this research asks: **In what ways and to what extent can urban policy and planning that addresses climate change also foster and advance ecological justice?**

In exploring this central research question, two issues are interrogated:

- a) I will examine the idea of ecological justice in depth and ask: how does it compare to other views of environmental justice and what value does it bring to our understanding of climate justice?
- b) I will examine the ways and extent to which the principles of ecological justice are, and can be, incorporated into urban planning. I will examine two urban planning approaches in particular: The Transition Movement and the Smart City approach.

This discussion now turns briefly to outlining the methods that will be used in this 90-point thesis to address the questions identified here.

1.3 METHODOLOGY

Firstly, an in-depth literature review is conducted to understand what ecological justice means in the context of urban climate change. From this review, case studies of urban planning for climate change are also identified. These case studies build an understanding of what needs more focused attention and what lessons can be taken from previous work, shaping the purpose and findings of this paper (Davidson & Tolich 2003). The literature review will identify principles of ecological justice and evaluate and critique the background of two selected urban planning approaches (the Transition Movement and Smart City approach), explaining why these two cases were selected to examine the intersection between climate change, urban planning and ecological justice.

As discussed by Yin (2018), a case study research method is well suited to this research question as it focuses on 'how' and 'why' questioning. This research requires no behavioural control over examined events or cases, and it is primarily concerned with understanding the significance of contemporary events over historical ones. This means it is more suited to case study research over other methods such as historical analysis, experimentation or surveys (Yin 2018). The two case studies selected for this research are themselves general approaches to urban planning that have been chosen to examine the issues raised in the research question. Both case studies are examples of contemporary, dynamic and developing methods of urban planning in response to climate change.

The two case studies are the Transition Movement and Smart City approach. The Transition Movement was selected as the first case study because it is an urban social movement that strives to build environmentally conscious communities and reduce oil-dependency (Hopkins 2012). There have been many previous studies on the Transition Movement, its ability to make change and its diversity, governance and social structures (Connors & McDonald 2011; Grossmann & Creamer 2017; McGregor & Crowther 2018; Scott-Cato & Hillier 2010). The majority of these studies evaluate European initiatives, considering whether those involved in the movement feel as though they are making a difference and evaluating their means of change (specific projects or initiatives, for example). Few studies have evaluated the extent to which the Transition Movement advances ecological justice (Kenis 2016).

Smart Cities will be explored as an alternative approach to tackling climate change issues in an urban context, one which favours technological change and innovation (Song et al. 2017). Smart Cities attempt to connect and communicate with each other to share information, while also embracing technical approaches to increasing resource efficiency and decreasing resource use (Picon 2015). Smart Cities are a useful case study for this research because they provide a unique way in which cities can lead their climate action at a local/ municipal government level using solutions that are often cutting-edge, collaborative and innovative. Previous research on Smart Cities has focused on their technological expansion, planning techniques and growth, while criticising their top-down, managerial or disengaging tendencies in some cases, but few studies have assessed the ecological justice of the Smart City approach (Caragliu, Del Bo & Nijkamp 2011; Cavada, Hunt & Rogers 2016; Hayward 2017; Papa et al. 2015; Viitanen & Kingston 2014).

To complement the literature review and case examples, and to test the analysis presented here, I also conducted six pilot interviews with key informants including locally-elected leaders and community organisers who had experience in and knowledge of both approaches to urban planning.

My research had University of Canterbury's low-risk ethics approval (see Appendix A on page 72 for the information sheet supplied to participants). The interviews were targeted at a small group of six key informants with high public profiles who were selected and contacted by email for short, semi-structured interviews. Key-informant interviews provide a relatively effective means of canvassing a community for the issues and interests that matter the most to them, and for validating the research findings of the literature review and case studies (Davidson & Tolich 2003; Tracy 2013). All data was anonymised and stored securely following the University of Canterbury's low-risk ethics requirements. The identities of all participants were protected and anonymised in the following results and discussion. With permission from participants, interviews were recorded to supplement handwritten notes and all interviews were transcribed.

1.4 THESIS OVERVIEW

Discussion now turns to providing an overview of this thesis. Having introduced the problem and methods in chapter one, chapter two presents the results of the literature review on justice. The first part of the chapter defines the terms distributional, intergenerational, procedural and recognitional justice as they are used in this project. The concept of ecological justice is then introduced as a growing alternative to these more traditional theories of justice and one which builds on these bodies of thought. As a relatively new theory, this thesis provides a framework for understanding ecological justice drawing on many of the principles from early ecological justice work by authors such as Schlosberg (2007) and Low and Gleeson (1998). The framework identifies three central points for ecological justice: recognition, participation and capabilities. These will later be used to examine and analyse urban planning responses to climate change. Finally, an examination of why ecological justice should be used over other theories of justice is given.

Chapters three and four introduce the two urban planning approaches that are examined in this thesis: The Transition Movement in chapter three, and the Smart City approach in chapter four. Both chapters will outline the origins, aims and purpose of these approaches to planning, and then assess the approaches against the criteria of ecological justice outlined in chapter two. The formal structures within both urban planning approaches are evaluated and their wider philosophy is explored, including their historical development and expansion.

Chapter five concludes this thesis by drawing on the qualitative findings of six indicative interviews with community advocates, locally-elected government representatives and planners. Key themes emerge, such as the need for new and innovative urban planning approaches, a desire for more community-based solutions, the weaknesses of top-down approaches, the value of high-quality data, and governance/ political barriers to community advocacy. The chapter concludes by highlighting

the further work that needs to be completed to solidify ecological justice within the wider literature and in public policy, before concluding this paper.

1.5 SUMMARY

This chapter has introduced the challenges of climate change, urban planning and ecological justice, also providing an outline for how this study will be conducted. The Transition Movement and Smart Cities were identified as the two contemporary urban planning case studies that will be examined in this thesis due to their ability to intersect climate change issues with urban design/ planning and justice. The next chapter asks: what is ecological justice, how has it emerged and what principles of ecological justice could be used to evaluate urban planning responses to climate change?

2 CHAPTER TWO: THE PRINCIPLES OF ECOLOGICAL JUSTICE

2.1 INTRODUCTION

This chapter investigates the development and use of ecological justice in political theory and its relevance to practical urban planning around climate change. The analysis examines first how the idea of justice has evolved in environmental political theory as ideas of environmental justice, distributional justice as well as intergenerational, procedural and recognitional justice. The discussion then considers how these concepts have influenced contemporary understandings of ecological justice (Schlosberg 2004). In this chapter, I argue that a deeper understanding of environmental justice theories is necessary because ecological justice is a relatively new, yet vitally important concept (Schlosberg 2004). The discussion identifies three principles of ecological justice: recognition, participation, and capabilities. These principles form the basis for using ecological justice to evaluate urban planning responses to climate change in later chapters.

2.2 THEORIES OF JUSTICE AND ENVIRONMENT

All theories of justice build on traditional understandings of the fair distribution of material and social advantages between people (Rawls 1999; Shi et al. 2016). A more robust and developed understanding of justice also involves acknowledging the societal and procedural limitations to fairness, and how these relate to cultural groups, wealth, wellbeing and risk (Sen 2009; Young 2000). Contemporary understandings of justice have also begun to consider questions of agency and self-determination, where a minimum level of capabilities, capacity and opportunity is required to live a fulfilled and just life (Shi et al. 2016). The emerging theory of ecological justice builds on this by extending the rights, capabilities and protections to both human and non-human forms of life, as will be examined later in this chapter (Schlosberg 2007).

2.2.1 Environmental and Distributional Justice

Use of the term justice began to emerge explicitly in the context of environmental debates, with the environmental justice movement of the early 1980's in the United States, where activists organised to stop the state of North Carolina from dumping around 60 million kilograms of contaminated soil in an area with the highest proportion of African-American citizens (Mohai, Pellow & Roberts 2009). In that historic case, the soil was contaminated with polychlorinated biphenyls (PCBs) which have been shown to increase the risk of cancer, damage the immune system and decrease reproductive health, among many other adverse health impacts (Mohai, Pellow & Roberts 2009). The beginnings of the environmental justice movement were therefore centred around environmental racism,

usually the disproportionate spread of environmental harms and risks in predominantly poor, African-American communities (Walker & Bulkeley 2006).

As the environmental justice movement grew and spread into academic research and policy analysis, its scope expanded beyond environmental racism and injustice (Walker & Bulkeley 2006). A stronger focus on equality and the inclusion of justice for different genders, age groups, religions and ethnicities has broadened the justice movement (Sen 2006; Walker & Bulkeley 2006). Notions of environmental harm have also expanded beyond risks of soil pollutants and human health, now including access to clean water, greenspace and clean energy (Walker & Bulkeley 2006). Part of this expansion was to strengthen the 'justice' element of environmentalism. Early environmentalism ignored many of the core justice and equality issues, paying little attention to the underlying social, economic and political factors that create environmental injustices (Mohai, Pellow & Roberts 2009). Many critics argue that mainstream environmentalism still ignores these social factors, however as the social impacts of climate change become more apparent, all people will need to carefully consider these social impacts and the broader links between environmental health and human wellbeing (Adger et al. 2009; Martinez-Alier et al. 2016).

2.2.2 Environmental Citizenship

Ecological and environmental citizenship are also crucial elements of environmental justice, as the justice movement has expanded to include recognition and participation, two heavily intertwined concepts with citizenship (Reese & Jacob 2015). Kenis (2016) describes ecological citizens, in the context of the Transition Movement, as those who consciously reject economic steering and consumerism in favour of ecological sustainability. Dobson (2003) argues that ecological citizenship requires a deeper level of change, beyond commercial activity, and an intrinsic desire and concern for ecological protection. Ideas of civic ecology, where community-based environmental stewardship practices work to produce just social and environmental outcomes, are also essential elements of ecological citizenship (Krasny & Tidball 2012). Ecological citizenship is an important element of environmental justice because justice principles underpin it. According to Dobson (2003) and Wolf, Brown and Conway (2009), ecological citizenship is owed non-reciprocally, in both public and private spheres, and extends beyond the boundaries of communities, cities and states. Furthermore, the principal virtue of ecological citizenship is justice; just outcomes and just treatment of people and place (Dobson 2007a; Schlosberg 2004).

2.2.3 Intergenerational Justice

This theory of justice, when applied to environmental problems, raises concerns around moral duties and political relationships between past, present and future people (Campos 2018). The central focus is around reducing harm and injustices across time, including historical abuses against ethnic

minorities, increasing national debt, changing retirement benefits and environmental degradation (Patterson et al. 2018). Intergenerational justice is a core element in climate change debates, built on a desire to leave the planet in a better state for generations to come (Schuppert 2011). As current climate predictions suggest that climate change will only continue to get worse, intergenerational justice is a motivating principle for many activists, policy makers, and academics (Schuppert 2011).

However, asymmetrical power relations that exist between contemporary and future actors are the driving forces causing intergenerational injustices (Patterson et al. 2018). This means that current actors and decision-makers hold power over future generations, able to significantly influence the kind of world, climate and society that they will inherit. The challenges of securing this inheritance are vast. People seem to value providing for their personal situations, families and investments over ensuring that the natural world is secure and well-treated for generations to come. This self-focused motivation is not a new phenomenon. Intergenerational justice has always been a challenge because current generations do not see many or any adverse effects in their lifetimes and therefore take no interest in preventing them (Schuppert 2011). Political cycles are small, and officials often focus on getting re-elected instead of making tough environmental decisions that may leave them unpopular with their electorates. Among many more reasons, climate change is a complex, global, intergenerational problem and, as previously mentioned, the scientific facts are too often drowned out by misinformation, fake news and political disputes. The need for an approach that incorporates intergenerational justice is therefore vital if a socially just and ecologically sustainable future is desired.

2.2.4 Procedural Justice

The basic principle of procedural justice is the need to design institutions and processes in a way which enables all people to participate and engage (Patterson et al. 2018). In the context of environmental debates, decision-making processes should be fair, outcomes should be just and representative, and all groups and interests in society should be included (Bennett, Hine & Mazerolle 2018). Procedural justice is an essential element of environmental justice because it requires people, communities and governments to think about their decision-making processes and question whether their procedures are just and fair. Procedural justice aims to recognise that some vulnerable or disadvantaged people cannot have their say, or their voices heard. Only by acknowledging these inequalities can environmental, ecological or distributional injustices be resolved.

A lack of procedural justice is evident in many cases of environmental injustice, as the concerns of communities are either ignored or silenced. Thinking back to the previous example of PCB contaminated soil in North Carolina, only when the community was heard were environmental

injustices prevented, yet there is still a long way to go (Mohai, Pellow & Roberts 2009). Procedural justice is therefore as much about well-designed institutions as it is about voice, representation and participation. Having a say and being heard is a crucial element for all areas of justice, particularly as many societies plan for a socially just and ecologically sustainable approach to climate change (Raworth 2017).

2.2.5 Recognitional Justice

Building on the principles of procedural and distributive justice, recognitional justice focuses on what Patterson et al. (2018) describe as the “*highly uneven playing field*” of adverse environmental impacts. This theory of justice highlights that a systemic failure to recognise the social, cultural, political and economic disparities and inequalities between people and their environments has resulted in various forms of harm, insult, degradation and destruction that is neither just nor sustainable (Schlosberg 2007; Young 2000). A failure to recognise and resolve these historical and contemporary inequalities is, as Dobson (2007a) describes, the foundation for distributive injustice as well. In combination with closed decision-making processes and a lack of procedural justice, a failure to recognise deep inequalities results in serious environmental challenges. The geographies of climate change, namely the disproportionate adverse effects on the most vulnerable communities, are the result of a widespread and sustained lack of recognitional justice (Gatrell & Elliott 2015; Walker & Bulkeley 2006).

One key element to recent recognitional justice research is the growing concerns over ‘ecological debt’ and ecologically unequal exchange (Roberts & Parks 2009; Warlenius, Pierce & Ramasar 2015). These concepts refer to the disparities in environmental (and social) harm that the global political economy is creating, concerning the extractive industry, energy production and the commodity supply chain (Roberts & Parks 2009). There is a growing call for developed economies to cease environmentally destructive activity in the developing world and to repay the ecological debt they have amassed so far (Roberts & Parks 2009). The call for recognitional justice and ecological debt reduction features in the United Nations Framework Convention on Climate Change, for example (Tomlinson & SpringerLink 2015). This is because climate change is perhaps the most significant, global outcome of ecologically unequal exchange, particularly for low-lying Pacific communities and others who have contributed negligibly to greenhouse gas emissions, yet face the most severe and immediate impacts (Gatrell & Elliott 2015; Nunn 2009).

While theorising ecological debt, it seems intuitive to focus on debt in commercial terms; the need to repay that which one owes and make amends for any damages or inconveniences caused along the way. Research often focuses on the colonial damage caused in the developing world or the nature of destructive capitalism in the global political economy (Roberts & Parks 2009; Warlenius,

Pierce & Ramasar 2015). The significance of these problems should not be downplayed. However, we also need to ask deeper questions. To whom, or what does society owe an ecological debt to? Yes, it is to those who have been used, abused or unheard, but it is also to the wider ecosystem and the planet. Environmental justice and the unfair distribution of environmental risks will always be an important factor for human life, but we must also work to provide ecological justice with and for nonhuman nature as well (Dobson 2007b; Schlosberg 2007).

2.3 LIMITS OF ENVIRONMENTAL JUSTICE

As discussed in the previous sections, traditional conceptions of environmental justice have focused on the allocation of environmental risks and benefits, and how they impact on the lives, rights and abilities of people. Procedural, intergenerational and recognitional justice bring new elements to the environmental justice debate, giving specific attention to barriers of participation, temporal limitations and the acknowledgement of past wrong-doing. However, the complex challenge of planning urban areas around climate change requires a greater definition of justice, one that also considers the role of non-human life and places it as an equal. This includes the all elements of the ecosystem, from animals to plant-life to air and water quality, and these elements should be considered beyond the benefits they provide to humans, but as being valuable in their own right. This section examines the theory of ecological justice and develops a framework and criteria for it, which will later be used to examine the extent to which two urban planning approaches to climate change are ecologically just.

2.3.1 Theorising Ecological Justice

All the previous elements of environmental justice seek better environmental conditions, a fair allocation of environmental risks and benefits, and instil a desire to produce equal and open opportunities in the environment. However, despite these concerns being centred around environmental justice, the actual *environment* usually comes out second best. In distributive justice, the chief concern is the health impacts of unequal distribution on humans, not the planet.

Intergenerational justice is focused on providing a healthy and liveable environment for future generations of humans, not for nature. Procedural justice considers the fairness of institutions and processes for people, not the rights of the natural world, and recognitional justice primarily concentrates of the inequalities between people, not the planet. Even ecological debt somehow manages to prioritise the impacts on humans above ecology. This human-centred focus on justice does not come as a surprise, after all, these concepts are developed by humans, for humans, with human interests in mind. However, by consistently and systematically prioritising humans above the environment, we ignore the value of nature and our urgent need to coincide with it.

Ecological justice takes a nuanced approach to environmental justice theory, one that prioritises nonhuman nature and humans, recognising that humans are but one part of a much wider ecosystem. Ecological justice is therefore focused on the relationships between humans and the natural world (Dobson & Eckersley 2006; Schlosberg 2007). Ecological justice goes well beyond the distribution of environmental features or risks as it also prioritises the intrinsic value of nature and our place within it. Like many political justice theories, there is some debate over the specific dimensions of ecological justice.

Schlosberg (2007) offers an expanded theory of ecological justice, where the human-centric elements of the environmental justice movement are broadened to the non-human world as well. Schlosberg (2007) describes how the three principles of *recognition, participation and capabilities* make up an ecological justice definition that is broad enough to involve all forms of life. Recognition asks us to acknowledge the similarities between human and non-human life, such as agency, shared needs, interests and sentience. Schlosberg (2007) also requires us to recognise the integrity of all life, as autonomous, self-regulating and resilient. Low and Gleeson (1998) highlight this point as their central principle of ecological justice; that every natural being has the right to experience and enjoy the fullness of its unique style of life. Participation is seen as a central element to ecological justice, having learned lessons from recognitional and procedural injustices (Dobson 2007b; Schlosberg 2004). By recognising the historical and contemporary abuses against human and natural environments and removing the procedures and processes that create said abuses, ecological justice can be built (Browning 2017).

The capabilities approach to ecological justice is perhaps the most important element in this theory because other components tend to fall within capabilities, such as the capability to participate and the need to recognise inequalities between the capabilities of humans and nature. Sen (2009) describes the capabilities approach as an informational focus on comparing advantages and possibilities that people may or may not have, over a more utilities-based approach that focuses on overall happiness. It is important to remember that this applies equally to nature as it does to humans. Schlosberg (2007) stresses this point by summarising the capabilities approach as one that focuses on the ability of humans and non-humans to flourish. Whether it is political inclusion for humans, healthy habitats and environments or social affiliations, all living things should have the right to pursue their lives as they wish without impeding on each other (Low & Gleeson 1998; Schlosberg 2007).

The environmental theory and political science behind ecological justice are clear but the framework is not. What are the criteria for evaluating whether something is ecologically just and how can

ecological justice be framed in a way that is simple and easy to understand? After analysing and reflecting on the environmental theories of Dobson, Schlosberg, Sen, Low and Gleeson, and many others, environmental justice is clearly an evolving theory. I argue that ecological justice can be best understood as the next evolution of environmental justice, as it helpfully widens the scope for justice well beyond a human-centric approach and towards an all-inclusive, ecological stance. While many theorists have contributed to this understanding, Schlosberg's theory of ecological justice resonates best as it makes an explicit point of linking previous theories of environmental justice with ecological justice (Schlosberg 2007).

2.3.2 Framework for Ecological Justice

Now that ecological justice has been defined and analysed in context, a clear framework can be developed for use in researching how planning processes might advance ecological justice. While such a complex and interconnected topic could never be as simple as checking some boxes, a few key principles have emerged as vital in producing and sustaining ecological justice. This framework will allow clear criteria for ecological justice to be developed. It will later be used as an evaluator for climate change strategies in this paper but could also be applied to other environmental projects and policies with further research. The three fundamental principles of ecological justice are:

1. Consideration of non-human nature as equal as human nature in rights, protections and value.
2. Ensuring all human and non-human life has the capability to flourish within environmental limits.
3. Recognition that humans are part of a much wider ecosystem that must be protected in the face of dangerous climate change and biodiversity loss, for the sake of all life on earth.

The first principle of the framework is fundamental to ecological justice and it best captures the meaning of ecological justice. Essentially, treat all life equally in a fair and inclusive way by giving it the same rights and protections as humans where environmental issues are concerned (Schlosberg 2007). Animal rights, including chemical or cosmetic testing and farming, for example, are beyond the scope of this research. An analysis of diets, agriculture and rights against ecological justice would require extensive further investigation. This paper therefore only considers the criteria for ecological justice to be relevant and used in the context of urban environmental planning and climate change.

The second principle of ecological justice is inspired heavily by Low and Gleeson (1998), whose core principle of ecological justice is that every natural being has the right to experience and enjoy the fullness of its own style of life. However, by adding the consideration of capabilities within environmental limits, this point acknowledges that 'flourishing' or living a 'full life' does not mean

humans have to continue to over-consume to live the 'good life'. Clearly acknowledging environmental limits reinforces the first point, ensuring ecological justice and recognising the need to consume less and live within sustainable limits (Raworth 2017). The word flourish is used so that principles of recognitional and procedural justice are accounted for. Are all human and non-human interests represented and able to have their voices heard? Are all living things able to connect and engage with others, and does the environment allow for these exchanges? Are all material and social needs fulfilled? There is, of course, a noticeable overlap with social justice here, as human needs and environmental protection are heavily intertwined.

The third and final principle of ecological justice explicitly acknowledges climate change and deep interconnections within nature. Humans are just as reliant on healthy habitats as non-human nature, most notably, of course, clean water, clean air, sustenance, and a liveable climate. The recognition of these fundamental realities is often missing in politics and society. As the driving force of climate change, it is paramount that humans take the lead in mitigating the damage, although this must be done in a way which recognises that all life on earth is at threat. This means that human-centred adaptation strategies do not necessarily meet the threshold for true ecological justice. For example, some human communities can adapt the coastlines as the sea levels rise but these communities, who may build walls or relocate, often give less attention to the impacts on coastal biodiversity and habitat destruction. Therefore, greater consideration of the threats that climate change poses to all life is required to provide true ecological justice.

Using these three central ideas of ecological justice, criteria for evaluating ecological justice can be developed. The criteria build upon the core ideas of the framework, but present them in a way that is simplified, easier to use, and incorporates elements of more traditional forms of environmental, recognitional, procedural and intergenerational justice.

2.3.3 Criteria for Ecological Justice

When considering the underlying framework of ecological justice as outlined above, I argue that three central components of ecological justice have emerged. These three principles take the vital elements of the framework, such as flourishing for all life on earth and the value of non-human nature and simplify them in a way that is both workable and clear. I propose the following as ways to evaluate the ecological justice criteria against urban planning in the context of climate change. The three principles of ecological justice are as follows:

1. Recognition

Recognising that urban planning needs to incorporate climate change, and cities must reduce climate vulnerability to protect their citizens and non-human life. Here, the need to recognise

the rights and protections of all life on earth also plays a vital role. Not only for human gain but for their inherent value. Recognition of people, planet, rights and protections is essential in building a safe and just future for all life on earth. We could judge the extent to which policy-making and planning processes advance ecological justice by asking: are the rights and protections of all life recognised? Does the planning approach recognise the significance of urban planning around climate change in cities and is it useful in doing so?

2. Participation

This principle incorporates elements of procedural and ecological justice to ask: are all voices being heard? Can human and non-humans participate in a meaningful way in urban planning processes? What interests are left out of the planning and participation processes? We could assess the ecological justice of a planning approach by asking who has a voice and the ability to participate in these processes? Are any interest groups or concerns (e.g. of non-human nature, minorities, women, etc.) regularly excluded or are their methods to listen to their concerns?

3. Capabilities

Finally, drawing heavily on the work of Schlosberg (2007), the capabilities of human and non-human life must be considered. Are they able to flourish within environmental limits and without negatively impacting each other? We could assess the ability of planning or policy-making to advance ecological justice by asking if planning approaches provide support for human and non-human life to live reasonably and with support.

Recognition, participation and capabilities will be used as the criteria for ecological justice for the remainder of this small 90-point thesis. They will be used to evaluate the Transition Movement and Smart Cities. Before examining those case studies, it is important to further examine why ecological justice and its core principles should be used and what benefits it will bring to this study.

2.4 WHY USE ECOLOGICAL JUSTICE?

As the concept, framework and criteria of ecological justice have been developed, this analysis now turns to why it should be used as a tool of analysis and why it matters. In summarising the previous discussion, ecological justice provides a more holistic and well-rounded approach to justice and the environment. It includes the rights and protections of nature beyond human dependence and stresses the need to value and protect the entire ecosystem, not just certain pockets, in certain areas, protecting certain interests. As such, one of the key reasons to use ecological justice is the vital role it plays in preserving the biodiversity of life. Animals and ecosystems are worth protecting,

for our interests and theirs. For humans, the necessity of nature is clear but often forgotten. A liveable environment is a necessity of life. We need to eat, drink safe water and breathe clean air. As parts of a functioning ecosystem, non-human entities play a vital role in maintaining mutual survival and in allowing everything to flourish. Bees, for example, are essential as their pollination services are needed to grow an estimated 90 percent of the world's nutrition (Kleijn et al. 2015). Furthermore, just two percent of wild bee species are responsible for approximately 80 percent of crop pollination, making their existence and protection even more important (Kleijn et al. 2015). Without them, crops would be decimated, and extreme food shortages would likely occur. Furthermore, many of the plants which feed animals reproduce due to bee pollination, leaving many other aspects of the food chain at risk of food shortages. The extent that one seeming small example of bees could have on the wider ecosystem demonstrates the need to consider all human and non-human interests and the importance of building ecological justice.

The value of biodiversity beyond human gains should also be stressed here as it is vital to ecological justice. It is often easy, as a human, to consider one's interests as the most important and to see the human race as the most unique, powerful and superior species on the planet (Dobson & Eckersley 2006). However, while humans may be the most intelligent species on earth, other animals possess unique abilities that easily surpass human capabilities. Cheetahs can easily outrun any human, pigeons have homing abilities beyond humans, and the sensory capabilities of many other animals outweigh human potentials (Dobson & Eckersley 2006). These unique qualities demonstrate the significance and intrinsic value of life and the need to consider ecological justice over other varieties of justice or different climate-action strategies. Biodiversity would be best protected if an ecological justice approach was taken, vital for human interests and survival, as well as preserving the intrinsic value of nature and ensuring all life can flourish.

As well as protecting all life on earth, an ecological justice approach is vital in preserving desired environmental conditions and combatting climate change. In this sense, ecological justice is critical for the future. The role of cities, as cultural, political and economic centres, is paramount. Cities act as both the main driving source of climate change and the places where solutions and transitions towards new low-carbon economies are possible (Bulkeley et al. 2010a). However, these centres of considerable power cannot operate without a wider network of food security and environmental protection. For cities to adapt to climate change and mitigate future damage, a well-protected and diverse ecosystem must be preserved and maintained. Non-human environments, natural features and animals all play a vital role in providing a network of food, drinkable water and material supplies for each other, and without protection for all of these elements, humans will be unable to flourish (Bulkeley et al. 2010b). Should urban areas fail to plan for climate change in an ecologically just

manner, they also risk facing resistance from marginalised and vulnerable groups, and being forced into maladaptive strategies such as forced land clearances (Shi et al. 2016). This is where the principles of recognition, participation and capabilities are particularly important in ensuring that all people, non-human life, voices and perspectives are heard to create just and fair climate transitions.

The principles of ecological justice will be used throughout the remainder of this thesis as the central means of evaluation for urban climate change responses. While other research has looked at the role of cities and communities in responding to climate change, this thesis will use the relatively nuanced and underutilised concept of ecological justice to determine whether the urban planning response strategies actually reflect the kind of social and environmental world we are required to build (Bulkeley et al. 2010a; Newman, Beatley & Boyer 2009).

2.5 SUMMARY

This chapter has examined theories of justice and the environment. Starting with more traditional theories, such as environmental, procedural, intergenerational and recognitional justice, a clear framework and criteria for ecological justice were developed. This is because traditional theories of environmental justice do not go far enough to include the rights and protections of all living things. Contemporary and future urban planning responses must consider the rights and protections of all environments and all forms of life if they wish to build a truly just and sustainable future in the face of dangerous climate change. Three principles, acting as the criteria for ecological justice, were developed: recognition, participation and capabilities. These three core elements of ecological justice will be used in the following two chapters to evaluate urban planning responses to climate change.

3 CHAPTER THREE: THE TRANSITION MOVEMENT, URBAN PLANNING AND CLIMATE JUSTICE

3.1 INTRODUCTION

This chapter examines the ways and extent in which the Transition Movement can advance ecological justice for urban communities. The initial analysis focuses on the Transition Movement itself, its motivating principles, and how it operates in practice. Core debates and critiques of the movement are then examined, focusing on how the movement uses power, its internal conflicts and divisions, the structure of its governance and the diversity and inclusion of its participants. Following this assessment, the criteria for ecological justice that was developed in the previous chapter is used to examine whether the Transition Movement advances ecological justice. I argue that the Transition Movement advances ecological justice and provides a more environmentally-sustainable and just way of life for urban communities; however, the benefits for non-human life and minority groups within society are either indirect or non-existent.

3.1.1 Transition Towns as a Social Movement

Transition Towns is often referred to in numerous ways, including the 'Transition Network', the 'Transition Movement', 'Transition Towns' or simply 'Transition'. The term 'Transition Movement' will usually be used as the primary term of reference in this thesis. When referring specifically to the organisation that fronts the movement, 'Transition Network' will be used instead. While the term 'Transition Towns' is still used in some studies, 'Transition Movement' appears to be more prevalent in recent scholarship. This is largely because Transition has spread beyond towns, now taking place in cities, churches, universities, businesses and other groups. The addition of 'movement' also allows researchers to explore the wider cultures, projects and developments that have, in some way, been inspired by the Transition Movement, but may not be officially recognised at this stage. The contemporary use of 'movement' instead of 'towns' also reflects how the movement is perceived and how it acts.

While nowhere near as well-known or disruptive as other highly influential movements, such as the American civil rights movement or the Arab Spring, the Transition Movement is a social movement built on grassroots practices that target systemic change. Transition is built on collective action principles, guided by organisational structures and designed to empower people to create and drive change by resisting dominant norms (Martin 2015; Mayo 2005). Transition, therefore, captures many elements that may be required for it to be considered a genuine social movement. However, the great social movements have also sought to influence the political process directly, often

through direct protest action and lobbying. The Transition Movement, as discussed later in this chapter, is focused on internal action and changes. Instead of protesting and driving widespread political action, the Transition Movement encourages actors to make changes in their own lives, work cooperatively in their communities and solve their own problems without relying on government action. This fundamental difference separates the Transition Movement apart from the great political and social justice movements. Despite this separation, the size and spread of the Transition Movement, alongside its clear philosophy and desire for change, allow it to act as a movement.

3.2 ORIGINS AND PURPOSE OF THE TRANSITION MOVEMENT

Rob Hopkins was a permaculture teacher in Kinsale, Ireland in 2004 when he first developed the idea of Transition Towns (Bailey, Hopkins & Wilson 2010; Hopkins 2011). The project began as a classroom initiative, where students were tasked with devising an energy descent plan to reduce Kinsale's oil dependency over the next 16 years (Bailey, Hopkins & Wilson 2010; Hopkins 2008). The proposal proved to be a success, with the Kinsale Council pledging its financial support to facilitate community gardens and other transitional initiatives. Following the early success of the energy descent plan in Kinsale, Hopkins returned to the UK, specifically the town of Totnes, Devon, where he created the first official Transition Town in September 2006 (Hopkins 2008).

After Hopkins launched Transition Town Totnes in 2006, he and others began the process of producing a replicable framework to transform their own towns, cities, businesses and organisations into formal Transition initiatives. The passion and interest of those within the movement have allowed it to spread internationally. Partly thanks to the organisational frameworks of it, but also due to the collective action and passion of participants. According to the Transition Network's official website, the movement includes a total of 932 official initiatives around the world, operating under 26 national hubs in May 2018 (Transition Network 2018). The ideas behind the movement all stem from the need to reduce oil dependency as 'peak oil' approaches and to build more resilient local communities in the face of climate change.

Peak oil refers to the finite nature of oil as a resource, believing the maximum rate of oil production has already been reached. This peak in production coincides with ever-growing demand, likely leading to the exponential rise in global oil prices. However, like Newman, Beatley and Boyer (2009) note, the precise point in time of peak oil is subject to three main caveats. Firstly, the ability to extract oil can and will fluctuate under the policies of specific governments within states. Secondly, new technologies may be able to find and extract more oil than was previously thought. Finally, reliance on the international market means that fluctuation in oil prices and production leads to

variance in supply. For example, the oil price crises of the 1970s and the global financial crisis of the late 2000s, which demonstrate the potentially fickle nature around the geopolitics of oil and the dangers of oil interdependency (Newman, Beatley & Boyer 2009). Despite the potential for new oil discoveries and technological advances, and with the often fickle nature of the industry in mind, the fact that oil is a finite resource is the fundamental challenge of peak oil that changing governments or new technologies cannot overcome without substantial change or a shift to alternative energy supplies (Hopkins 2012).

The Transition Movement's economic philosophy builds on a post-materialist and localised perspective, meaning it avoids unnecessary consumption and favours local products, produce and services. Growing economic instability and widening inequalities are met with community-based action in an attempt to facilitate a more fair and just economic system in communities through grassroots change (Elton 2017). The reliance on low-wage, environmentally destructive economics to produce cheap goods is something the movement aims to break away from, instead prioritising the use of local businesses, skills and industries to produce sustainable results (Hopkins 2011). This shift in economic practice achieves two of the movement's main goals: to reduce oil dependency and foster local sustainability. Elton (2017) notes Jason F McLennan's example of a "near-heavy, far-light" economy in this context, where anything heavy ought to be produced locally (such as building supplies or food), while everything light (such as ideas and information) can travel the globe, causing minimal social and environmental harm.

A more localised and sustainable economy is important for cities and communities if they wish to reduce their ecological footprints and future-proof themselves (Raworth 2017). In a changing climate, these future-proofing techniques appear even more vital. The Transition Movement approaches the challenges of climate change as positive opportunities for change and social development, as opposed to the fear, guilt, doubt and anxiety that can often arise when dealing with climate change (Hopkins 2008). As Hamilton (2010) describes, climate change has become a deeply politicised issue, particularly in the United States, where science and facts have been captured by partisan politics. This scientific neglect, alongside the prioritisation of destructive economic growth, has created a political and social environment where denying climate change is somewhat popular and accepted, particularly in right-wing politics (Hamilton 2010). The significance of the Transition Movement's positive approach should not be understated, as the way in which people perceive environmental challenges and the attitude they approach them with can greatly impact their willingness and ability to make change (Kenis 2016).

The scale of the Transition Movement also plays into these positive perceptions in many ways. From the movement's perspective, change from the individual level is not enough. A focus on individual change can also frame people as consumers, whose ability to engage in environmental action is limited by their purchasing power (Kenis 2016). In this framework, sustainability is often only measured by a decision to purchase a reusable bag over a plastic bag, or similar small-scale financial decision. The Transition Movement's founders also believe that change at the national level and beyond is often too slow, fragmented and not transformative enough to deliver the desired outcomes in time (Cretney, Thomas & Bond 2016). Furthermore, as governments and policies change with electoral cycles, it is not always possible to count on government-level change to be effective or consistent over even a relatively short period (Cretney, Thomas & Bond 2016). Community-level change, driven through grassroots processes, is therefore seen as the most effective level of change. This is because community-level change can create genuine political action while building a greater degree of social cohesiveness and wellbeing (Feola & Nunes 2014; Hopkins 2011; Kenis 2016). Those working inside Transition initiatives tend to see their local scale as a strength because it makes change tangible, achievable and useful for the community (Hopkins 2008; Kenis 2016).

The Transition Movement is a deeply social process and participants often cite opportunities for social engagement as one of their main reasons for being involved (Transition Network 2018). On a global scale, participants often feel as though they are making a difference in the world and building a 'better tomorrow'. On a local level, participants can learn new skills and get to know their neighbours and communities (Felicetti 2013; Hopkins 2008). The extent to which people can achieve these social ambitions does vary between initiatives and places and will be discussed in detail in the following sections, while also reviewing the potential challenges and barriers to success.

3.3 THE PRINCIPLES AND PRACTICE OF THE TRANSITION MOVEMENT

3.3.1 The Transition Philosophy

Transition Initiatives, as outlined by Hopkins (2008: 134), operate under four assumptions:

- *"That life with dramatically lower energy consumption is inevitable, and that it's better to plan for it than to be taken by surprise."*
- *"That our settlements and communities presently lack the resilience to enable them to weather the severe energy shocks that will accompany peak oil."*
- *"That we have to act collectively, and we have to act now."*

- *“That by unleashing the collective genius of those around us to creatively and proactively design our energy descent, we can build ways of living that are more connected, more enriching and that recognise the biological limits of the planet.”*

These assumptions speak to the core of the movement and underpin the Transition Network as a whole. Participants within the Transition Movement are encouraged to refer to these principles when designing their initiatives (Cretney, Thomas & Bond 2016).

Using the four assumptions as a guiding philosophy, Hopkins (2008) outlined six distinct principles which he felt separated his concept apart from other social and environmental movements. These principles are: visioning, inclusion, awareness-raising, resilience, psychological insights, and credible and appropriate solutions (Hopkins 2008). Visioning is deemed important as it acts as the goal-setting element. Initiatives are encouraged to organise ‘visioning exercises’, including peak oil educational activities in schools, exercises that imagine what a town might look like as a Transition Town, and building a ‘resilience web’ (a practical exercise which physically links people, who are assigned roles as parts of a local ecosystem, with string to show interrelationships in nature) (Hopkins 2008). The inclusion principle encourages initiatives to involve people from all political, social, cultural and economic backgrounds, aiding diversity and representation within the movement. Awareness-raising is about educating and informing people about the movement and its guiding principles (Hopkins 2008). Resilience is about building resistance against shocks and allowing a social system to bounce back from challenges. The concept of resilience is widely debated within the literature, as some believe it may shift the blame and responsibility of governments onto communities (Adger et al. 2009; Hayward 2013; Newman, Beatley & Boyer 2009; O'Brien, Hayward & Berkes 2009). As this debate is beyond the scope of this paper, further discussions will be left out to allow adequate room to discuss the Transition Movement in greater detail.

The final two principles, psychological insights and credible and appropriate solutions, both draw heavily on the previously noted economic philosophy. Psychological insights underpin the ideology of the Transition Movement, aiming to positively motivate people into making change and building social connections, as opposed to motivating climate action through fear (Kenis 2016). The principle of credible and appropriate solutions encourages initiatives to make tangible and appropriate changes at the community level, like small building or gardening projects or reducing plastic consumption at local stores (Hopkins 2008).

The final main part of the Transitional movement’s operational philosophy is the ‘12 steps to transition’ framework, which has been relabelled as the ‘ingredients for transition’ (Cretney, Thomas & Bond 2016). The initial framework imposed a more rigid set of criteria that interested groups

would have to understand and acknowledge if they wished to become an official Transition Town (later, Transition Initiative) (Cretney, Thomas & Bond 2016; Hopkins 2008). The 12 key steps to embarking on a transition journey, as outlined by Hopkins (2008) and Transition Towns New Zealand Aotearoa (2009) are as follows:

1. Set up a steering group and design its demise from the outset.
2. Raise awareness.
3. Lay the foundations (network within existing groups and activists).
4. Organise a great unleashing.
5. Form sub-groups.
6. Use open space.
7. Develop visible and practical manifestations of the project.
8. Facilitate the great reskilling.
9. Build a bridge to local government.
10. Honour the elders.
11. Let it go where it wants to go.
12. Create an energy descent plan.

However, to some critics, these ingredients appeared too rigid and somewhat cumbersome (Cretney, Thomas & Bond 2016; Grossmann & Creamer 2017). This, in part, appears to have prompted the Transition Network to rebrand their 12 ingredients (which do not feature in plain terms on the Transition Network's website) into 'seven essential ingredients' (Cretney, Thomas & Bond 2016; Transition Network 2018). This rebranding still holds to the movement's philosophy and does not change any core principles. Instead, it appears to make the movement more flexible and adaptable to the aspirations and needs of localised initiatives. The seven ingredients, taken from the Transition Network (2018), are as follows:

1. Healthy Groups – cooperative and inclusive groups of people who work well together.
2. Vision – imagining and planning for the desired outcomes.
3. Community Involvement – embed Transition in the entire community.
4. Networks and Partnerships – with other community groups, businesses and governments.
5. Practical Projects – build tangible and evident projects that are useful for the community.
6. Part of a Movement – connect, learn, inspire and cooperate with other Transition initiatives.
7. Reflect and Celebrate – reward your efforts and evaluate the initiatives.

Overall these refined ingredients appear to be a clear evolution of the previous model, offering a more adaptable and free approach while delivering very similar advice. For example, the previous

'12 steps to transition' reads like a rule set, where each previous step ought to be completed before progressing to the next one. The new 'seven ingredients' philosophy allows users to work simultaneously and freely on multiple ingredients, effectively removing any perceived pre-requisites and encouraging a more independent and self-guided process if desired. These new 'ingredients' also come across as somewhat idealistic and lacking in substance. While having goals and self-assessment criteria is likely very healthy for the movement, the lack of specific detail allows some of these terms to gloss over real goals. 'Vision' and 'Healthy Groups', for example, are admirable goals but lack any kind of assessment criteria. How do groups ensure they are truly inclusive? Who should they include? Are healthy groups necessarily "*groups of people who work well together*", or does this lead to plain, homogenous groups instead, where debate is squandered?

Within the Transition Network, a culture of broader philosophical ideas, guidelines and advice exists beyond the ingredients to transition. Most notably, the early principles of "Head, Heart & Hands" guide the movement (Hopkins 2008). To successfully engage in Transition initiatives, the movement states that people must find a balance between the head, the heart and the hands (Transition Network 2018). The head being the best available information and evidence, the heart is the need to work with compassion and emotion in the social world, and the hands are required to turn these ideas into practical and tangible new projects. The "Head, Heart and Hands" principles underly the 'ingredients to success', together forming the basis of the movement's ideology, underpinning the actions and outcomes of the movement and providing it with a familiar yet distinct identity. This is achieved by offering some of the common goals of other environmental movements, such as community involvement and networked partnerships, in a clear and distinct manner unique to the Transition Movement.

3.3.2 Spread and Extent of the Transition Movement

As noted, the official count of Transition Initiatives as of writing this chapter sits at 932 (Transition Network 2018). The interactive map offered by the Transition Network outlines the location of 844 of these initiatives. 437 of them are based in Europe, 313 are found in the United States and Canada, 64 in Oceania and the remaining 30 initiatives are dispersed around the world, including 11 in South America, 12 in Asia and four in Africa (Transition Network 2018). The Transition Network did not respond to requests about why there appear to be 88 initiatives missing from the map. While not all-encompassing, these numbers likely reflect the general distribution of initiatives, something that will be discussed critically later in this chapter concerning group diversity and inclusivity.

The full scale of Transition initiatives is challenging to report and record for numerous reasons. Firstly, as acknowledged by the Transition Network (2018), many official initiatives (those who prescribe to the more formal organisational principles of Transition) around the world are not

registered on their website. Furthermore, there are many more 'muller' initiatives that exist globally, those communities who are considering joining the Transition Network and have made some form of contact with it. The number of muller groups is even more challenging to calculate. In 2010, Bailey, Hopkins and Wilson reported there were 186 formal initiatives and 802 mullers. Three years later, the difference between the two groups had significantly reduced, with Felicetti (2013) reporting there were 421 official initiatives and 566 mullers. The Transition Network does not provide recent data on mullers. Finally, there are likely 'countless' groups who have been inspired by the Transition Movement but are not considering joining and have not made contact (Felicetti 2013). No real estimates can be given on the widespread inspiration that the movement has created, but these soft effects should at least be considered when evaluating its spread.

3.3.3 Transition Governance and Participation in Practice

The Transition Network has developed a more comprehensive system of governance and communication as it spread (Transition Network 2018). Initiatives at the local level now feed into Regional and National Hubs, of which there are currently 26 (Transition Network 2018). While initiatives are still responsible for their own projects and decisions, National Hubs can act as the voice for the Transition Network in the region, often handling interactions with and decisions surrounding governments, media coverage and other social movements, while providing some overall governance support and guidelines for initiatives within their jurisdiction (Transition Network 2018). Per the movement's self-organising, visionary and diverse philosophy, National Hubs are relatively organic as well. They are usually comprised of people from the Transition initiatives they oversee, often relying on volunteers and making decisions by consent through a sociocracy (Transition Network 2018).

From their inception in New Zealand in 2009, National and Regional Hubs have proved largely successful for the Transition Network. They allow the official Transition Network team from Totnes to communicate with a large number of individual initiatives, streamlining the process and effectively making the Totnes team the international arm of the movement (Transition Network 2018). Furthermore, as noted by Transition Aotearoa (2009) and the Transition Network (2018), the National Hubs allow the Network to spread easier, fulfilling its desire to increase community involvement and raise awareness around peak oil and climate change. However, as is apparent in New Zealand's case, the reliance on volunteer hours and the changing nature and commitments of those who volunteer their time can result in under-supported, under-funded and inefficient National Hubs which may fade in activity and overall relevance (Transition Towns New Zealand Aotearoa 2009). Transition Towns Aotearoa, while still presenting a small active online community, appears outdated, showing the older '12 steps to transition' advice and offering links and information on

initiatives that no longer operate (Transition Towns New Zealand Aotearoa 2009). The intricacies of politics and governance within the Transition Network will be returned to later in this chapter, drawing on several critiques of the movement.

Aligned with the Transition Movement's philosophy of building practical projects that involve diverse and collaborative communities, an incredible number of thoughtful and innovative projects have been developed around the world in the areas of food supply, transport, the economy, conservation and wellbeing (Brunetta & Baglione 2013; Cretney, Thomas & Bond 2016; Hopkins 2008). As the first Transition Town, Totnes has a rich history of practical and tangible projects, boasting 39 unique projects in the small township of around 8000 people (Hopkins 2008; Transition Town Totnes 2018). Totnes' projects are so extensive that they can be divided into subcategories. In the 'Food Group' projects include locally milled, packaged and sold grain and pulses, produce that is exclusively grown and sold locally and the 'Incredible Edible Project'. This project makes use of unused public spaces including vacant land, parks, planter pots on footpaths and roadside gardens to plant and grow fruit, vegetables, herbs, nuts, and edible flowers. By making use of unused space and planting more productive plants, Totnes has drastically reduced its oil dependency, re-localising its food supply, cutting down on food miles and reducing its plastic packaging consumption (Transition Town Totnes 2018)

One of the more unique innovations in Totnes is the 'REconomy Project', which aims to re-localise the economy by encouraging people to produce and/ or purchase products locally and sustainably to build a strong local economy (Transition Town Totnes 2018). The most noteworthy feature of this project is the Totnes Pound (t£). The secure, silver foil-engraved, hologram-imbedded notes act as a substitute to the Pound Sterling (Totnes Pound 2018). People can exchange their Pound Sterling for Totnes Pounds into t£1, t£5, t£10, or t£21 notes at a 1:1 exchange ratio, except for the t£21 which can currently be exchanged for £20, offering a slight saving to the consumer (Totnes Pound 2018). There are currently 165 participating businesses or issuing points that accept the Totnes Pound, many offering unique special offers as added incentives for Totnes Pound spending (Totnes Pound 2018).

Beyond the benefits to sustainability and conservation that the Totnes Pound fosters, it has proven to be a forward-thinking initiative through its electronic currency system. The Totnes Pound has its own online banking system which allows users to buy products online from participating retailers using the Totnes Pound (Totnes Pound 2018). In an even more unique twist, the Totnes Pound electronic system allows 'pay-by-text', where users text the name of the business they are purchasing from and the amount they need to pay and both parties receive a reply text which acts as

their receipt (Totnes Pound 2018; Transition Town Totnes 2018). Money is deducted from their online Totnes Pound account. This kind of innovation not only reduces the need for physical resources but aids the versatility and ease of use of the Totnes Pound, enabling the project to be widely received within Totnes.

Other Transition initiatives in the UK have also introduced their own local currencies, including in Brixton, Bristol, Lewes and Stroud (Totnes Pound 2018). The scale of the Bristol Pound (£B) suggests that local currencies can be successfully introduced into larger urban areas. The city of Bristol has a population of over 450,000 people, with the wider county supporting over 700,000 people (Bristol Pound 2018). The wider area contains 667 Bristol Pound cashpoints and participating businesses, offering consumers enough variety to shop using the local currency in many sectors including hospitality, construction, transport and health (Bristol Pound 2018). However, it is important to note that local currencies are not, in of themselves, pure solutions to wider political problems. Their localisation attempts are often limited by pressures like the power of global corporations, support of free trade and destructive capitalism, particularly when entering large, globalised urban areas like Bristol (Marshall & O'Neill 2018). Wider criticisms of the political stance of the Transition Network will be discussed later in this chapter.

Learning from the early and dynamic example of Totnes and the UK, Transition initiatives have developed in many parts of the world, often using the Transition Movement's philosophy as a guiding framework to produce projects that are in some way locally-focused and unique to their area. In Australia, the Adelaide Hills Climate Action Group worked to develop Transition Adelaide Hills (Transition Network 2018). As a pre-existing community group, the community was able to build on their projects and create new ones such as a community garden, a bike-sharing initiative and refashioning groups who work to repurpose clothing and swap items to reduce their own consumption (Transition Network 2018).

Transition Albuquerque is a very active group in the US who have a range of projects including 'Transition Streets', an education and awareness programme that implements small, practical steps through its volunteers and information handbook (Transition Albuquerque 2018). The project enables people to get to know their neighbours and build social connections, as well as taking practical steps like fixing drafts and leaks in each other's homes, starting a collective compost, sharing tools and skills, and installing water catchments (Transition Albuquerque 2018). Transition Albuquerque is also involved in community gardening in schools, reskilling fairs and permaculture projects in each other's gardens (Transition Albuquerque 2018).

Global examples could fill the remainder of this paper and many more to follow, but as one final point, this paper will evaluate the Transition Movement beyond the developed global north. Viewing the specific details of Transition initiatives outside of the dominant areas (UK, Western Europe, North America and Oceania) is challenging for several reasons, including small sample size, translation difficulties and an overall lack of any online presence. The four transition initiatives in India and Bangladesh, for example, do not have their own website and two of them offer no information on their pages (Transition Network 2018). Other initiatives are very active, however, including Transition Brazil, which has an active online forum discussing 'REconomy' projects, plastic waste reduction strategies and community gardening (Transition Network 2018). The overall small sample size of initiatives from the Global South raises questions around the true diversity and inclusivity of Transition.

3.4 CRITIQUES AND DEBATES IN THE TRANSITION LITERATURE

Through a careful literature review of Transition initiatives and research, four key challenges and debates have been identified: the political position of the Transition Movement; internal conflicts within initiatives; questions around the movement's democratic health; and the diversity and representation inside of the movement.

3.4.1 An Apolitical Stance?

To provide open and inclusive communities, the Transition Network does not officially promote political viewpoints, endorsements, or acts. Instead, it largely encourages community-based, localised action that individual members can control and define (Hopkins 2008). While weak regarding real, vocal political action, it is also important to question whether Transition is apolitical at all. Are the goals of the movement not explicitly linked with a staunch political standpoint? Advocates of the Transition Movement believe that its supposed apolitical stance enables all kinds of people to comfortably become involved in Transition initiatives (Hopkins 2011). These advocates do support cooperating and coordinating with local governing authorities, but they do not support any lobbying, protesting or other clear political acts (Cretney, Thomas & Bond 2016; Transition Network 2018). While an apolitical stance could encourage more involvement, it is important to question how useful it is for the movement to be apolitical and whether a stronger position may produce more effective results in tackling the core issues of peak oil and climate change.

Stevenson (2012) highlights that the very culture of the Transition Movement is political and any attempt to frame it as entirely apolitical ignores its "cultural power". By establishing a clear, environmentally-conscious mandate with defined objectives, the Transition Movement is making a political statement. The movement's core philosophy states that it rejects the capitalist free-market

and wants localised, community-based environmentalism to flourish in its place (Stevenson 2012; Transition Network 2018). It appears the Transition Movement was formed in deep environmentalism and green politics; however, its outward reputation is one that attempts to avoid any political conflicts and disagreements officially. This complex stance does, perhaps, make it easier for individual people to become involved in the movement, however it may be reducing the movement's ability to sufficiently challenge the dominant power structures that it is trying to work against (Cretney, Thomas & Bond 2016). By not acting as a political force and rallying for change with central governments, the Transition Movement may not change anything beyond the relatively small number of communities where it is active (Cretney, Thomas & Bond 2016). This should not take away from the good work communities are doing at their local level but highlight that the broader systemic problems are being unchecked by the Transition Movement, making it a more unique, inwardly-acting social movement.

Another problem emerges when considering how the movement treats power and whether its apolitical stance and 'open' stance may worsen national environmental outcomes. This potentially allows governments to pass liability and responsibility onto groups like the Transition Network, relieving themselves of some climate responsibility and potentially worsening national environmental outcomes or negating the good work that the Transition Movement is doing (Mason & Whitehead 2012). Other groups and actors can prevent this by developing a clear political stance and rallying their governments, instead of simply cooperating with local authorities and building relationships with them, as the Transition Network does (Hopkins 2008; Schlosberg 2004).

3.4.2 Internal Conflicts

Any organisation or social movement is likely susceptible to internal conflicts of some description. However, the Transition Movement's reported conflicts are relevant to this paper because they bring the nature of the movement into question. According to a study by Cretney, Thomas and Bond (2016) in New Zealand, a core tension exists within the Transition model where individuals disagreed on what activities truly constituted the vision of the Transition Movement and could not make consented decisions. One interviewee, after suggesting their group hold a workshop on repurposed clothing was told: *"oh no no, that's not Transition Towns"* by another group member (Cretney, Thomas & Bond 2016). Another participant felt that their group members were *"losing touch... with what [Transition Towns] was all about"* (Cretney, Thomas & Bond 2016). Here it is important to note that other individuals firmly believe in the process, described by Cretney, Thomas and Bond (2016) as believing *"...their activities contributed to societal change through providing practical and realistic solutions for individuals to achieve and celebrate at a grassroots level."*

Other factors such as time pressure, burn-out, migration and wider societal structures feed into internal conflicts within Transition initiatives (Feola & Nunes 2014). The Transition Movement's reliance on tangible projects leads some users to experience burn-out and heavy time pressures (Cretney, Thomas & Bond 2016). This is largely because Transition projects are often voluntary, occurring outside of usual work and life commitments. In a world with increasingly high work hours and costs of living, additional responsibilities can become simply too much. One respondent to Cretney, Thomas and Bond (2016) noted that *"time is always a constraint as any involvement needs to be balanced with the need to earn a living."* Migration of people builds on these pressures too, as initiatives are often reliant on a few hard-working people to continue operating. The loss of one person from a Transition initiative has resulted in whole projects being cancelled (Feola & Nunes 2014). These tensions appear to be less significant at a national level and little research has suggested that individual initiatives experience many difficulties when dealing with their National and Regional Hubs.

3.4.3 Undemocratic Governance?

It is important to question whether the Transition Movement stresses good governance when considering levels of fairness and justice within the movement. Some researchers question the governance of the Transition Network, mainly at the initiative and international levels (Connors & McDonald 2011; Feola & Nunes 2014; Grossmann & Creamer 2017; Stevenson 2012). Feola and Nunes (2014) found that democratic vision and leadership was an essential characteristic of successful Transition projects, yet conflicts and tensions arose within initiatives as to how such organisation could best be achieved. This suggests a democratic deficit exists within the organisational structure of Transition initiatives. Feola and Nunes (2014) found that despite these tensions, the use and adherence to Transition guidelines and processes at the initiative level mark the difference between highly successful and less successful projects. What this analysis does not consider, however, are the broader implications of a potentially weak democratic process in the Transition Network. Sure, the Transition Network provides guidelines that are correlated with successful projects, but democracy is about more than just project success.

Connors and McDonald (2011) highlight a democratic deficit when they state that *"for a movement founded on principles of inclusion and participation, it appears that Transition Towns has, in practice, a quite rigid, top-down and it must be said, an inherently undemocratic management structure."* Similar criticisms are noted by Grossmann and Creamer (2017), where they draw on the fact the Transition Movement has an anointed founder, manifesto and rigid guidelines and trails that must be completed to become an 'official' member. These processes prove to be inherently undemocratic because they lack the checks and balances of representative democracy. While the Transition

Network may have shifted its more rigid policies and instructions into ‘ingredients’ and guides, removing some of its more authoritative elements, it still lacks many formal democratic structures. Some initiatives use semi-democratic processes for electing their steering committees or deciding on projects to invest in, but the wider network does not have formal voting rights or procedures. As Stevenson (2012) describes, the Transition Movement also lacks a formal membership process for individual people, further weakening its ability to hold accountable and transparent debates. Overall, it appears the movement has made steps towards strengthening its democratic processes, however the absence of true, formal democratic processes leaves the movement with a democratic deficit. This threatens its core philosophies such as healthy groups, involvement and participation, potentially leading to unjust outcomes for citizens.

3.4.4 Diversity and Inclusion

The fundamental debate within the literature here is focused on how the Transition Movement mixes its desire to be diverse and inclusive against its relatively homogenous culture. Essentially, how can it be truly diverse and open to other points of view and perspectives while simultaneously driving its own set agenda (‘ingredients to Transition’, Transition guidelines and other relatively rigid and homogenised processes)? Key criticisms focus on the ‘global’ nature of the Transition Movement and question its inclusiveness, branding the initiative as one that has effectively been captured by the relatively well-off, predominantly white, middle-class sections of society (Davis 2010; Grossmann & Creamer 2017; Stevenson 2012). If the Transition Movement is captured by certain demographics within society, it will ultimately limit the capabilities of the movement and severely restrict its ability to build a just and safe environment for future generations. Furthermore, the values and experiences shared by other cultures and people of all demographics would prove invaluable to the longevity and relevance of the movement.

While the Transition Movement has always acknowledged the need for diversity, inclusiveness and fair representation, it may be a long way off achieving these goals (Hopkins 2011; Stevenson 2012). Officially, the movement appears to pay little specific attention to incorporating minority groups and other left out demographics into the initiative, with most official information remaining very vague, aspiring to build ‘healthy groups’ and ‘community involvement’ (Transition Network 2018). These vague goals appear to further the ‘homogeneity versus diversity’ debate, as some could argue demographic diversity is covered by these goals, while others may insist that more specific targets are required to build true diversity (Grossmann & Creamer 2017).

After participating in the movement, Stevenson (2012) suggests that the Transition Network risks being *“reduced to a form of middle-class lifestyle politics, unable to cross borders or engage with other experiences and class histories”* if it does not develop a more critical view of class dynamics

and inequalities. Furthermore, the movement runs the risk of binding green politics to middle-class politics, something that would prove detrimental considering many poorer people often live in the worst environments (Gatrell & Elliott 2015; Stevenson 2012). Many people within the movement would largely contest this claim, including Hopkins himself, often noting that the Transition Movement is about localised change and community-driven projects and communities need to focus on the Transition principles of ‘healthy groups’ and inclusivity to foster diversity in their initiatives (Hopkins 2011; Transition Network 2018). However, this approach should be cautious not to shift the full blame onto communities.

A growing amount of further evidence suggests that those within the movement consider diversity to be a key challenge. One member of the Marsden and Slaithwaite Transition Town (Yorkshire, UK) stated that *“more and more people are getting involved, but we’re all the same – the Guardian-reading middle class”* (Davis 2010). Another Transition initiative, Transition Town Tooting (London, UK), was analysed by Grossmann and Creamer (2017), who found that the members of the initiative were disproportionately likely to be educated, white and not aligned with a particular religion. On a global scale, Feola and Nunes (2014) conducted an online survey of 276 initiatives from 23 countries and found that over half of respondents (51.2 percent) believed that their initiative’s representation of the diversity of their community was ‘not very good’. As already discussed, most official Transition initiatives are in North America, Western Europe or Oceania, meaning the movement is over-represented in the developed Western world. These results suggest that diversity and inclusion may be one of Transition’s greatest roadblocks. If the movement is not truly diverse or representative of all interests, can it foster ecological justice at all?

3.5 USING ECOLOGICAL JUSTICE TO EXAMINE THE TRANSITION MOVEMENT

As it applies specifically to this paper, the relationship between ecological justice and the Transition Movement is vital to this discussion. Why use ecological justice to assess the Transition Movement? How compatible is ecological justice and the Transition Movement? The answer is threefold: shared values, similar goals and it is a source of significant motivation. The Transition Movement values social connectedness, thoughtfulness and environmentalism. It acknowledges that humanity must make substantial changes if it wishes to live within environmental limits and destructive capitalism is part of the problem (Hopkins 2008). These values align with some of the principles of ecological justice, including recognising ecological limits and valuing nature and the environment.

The similarities between the values of ecological justice and the Transition Movement also translate into similar goals between the two. Where Transition aims to reduce oil dependency, build sustainable communities and combat climate change, ecological justice indirectly aims for this as

well (Kenis 2016). While ecological justice as a concept does not directly advocate an energy descent plan like the Transition Movement, such plans to reduce environmental harm are in line with the principles of ecological justice. The Transition Movement does not make any direct reference to ecological justice, however many of its aims will aid ecological justice. This is where an analysis of ecological justice in the Transition Movement will prove beneficial and offer new insights into the movement and urban climate responses more broadly. The Transition Movement values environmental protection and sustainability, but does it go far enough to ensure ecological justice? Is its environmentalism only really concerned about the human elements?

Despite the movement making no meaningful mention of ecological justice, it is motivated by ideas which could be argued to be compatible with the principles of ecological justice. Most of the literature on the Transition Movement and justice focuses on traditional environmental justice (the spread of environmental risks and benefits) or the social justice elements of the movement such as fairness, equality and representation (Connors & McDonald 2011; Grossmann & Creamer 2017; Hopkins 2011; Stevenson 2012). Little work has been done specifically on ecological justice in the movement, although a few key studies have emerged in this area. Reese and Jacob (2015) found that ecological justice was a stronger motivating principle for broader pro-environmental action than intergenerational justice or recognitional justice in a representative sample of German citizens. Reese and Jacob (2015) also found a perceived responsibility for the environment and the planet was the strongest predictor for pro-environmental intention. These findings suggest that ecological justice is a fundamental motivating principle for environmental activism. The work of Kenis (2016) should also be highlighted here. While it does not explicitly look at ecological justice, it finds that “ecological citizenship” in the Transition Movement is built on both individual and collective action with underlying ethical principles (Kenis 2016). The relevance here is that the Transition Movement is guided by ethical principles to pursue their environmental action. They are motivated by a need to protect themselves and a moral desire to preserve the planet (Kenis 2016). Again, the same questions arise. Does this moral desire to protect the earth extend far enough to be ecologically just? Or, does the Transition Movement’s core philosophy lack the ability to truly care for the whole planet and value non-human interests?

3.5.1 Recognition, Participation and Capabilities in the Transition Movement

The earlier criteria for ecological justice will now be used to examine the extent to which recognition, participation and capabilities are advanced or neglected within the Transition Movement. To summarise and bring clarity to this examination, here is the criteria again:

1. Recognition – of climate change issues in urban planning, of the rights and protections of all life on earth, and of the need to build just and fair outcomes.

2. Participation – the ability for all interests to be heard, to have a voice and to influence decision-making.
3. Capabilities – having the power and capacity to live a happy and flourishing life within planetary limits and without harm.

Firstly, the role of recognition is largely valued and upheld in the analysis of the literature undertaken for this thesis. There is no doubt that the Transition Movement advances and recognises the need to incorporate climate change adaptation and mitigation into urban planning. It is witnessed very clearly in the movement's philosophy and guiding principles, as well as in its practical projects such as community gardens or tool-sharing initiatives (see Transition Albuquerque 2018, Transition Network 2018, Hopkins 2008, and others for examples). Central motivations for the Transition Movement include reducing oil-dependency, localising food and material production, and mitigating or adapting to climate change (Elton 2017; Hopkins 2008). It is not clear, however, that recognition is consistently achievable within the current Transition philosophy. The Transition literature has not yet reached consensus about the importance of a community-based approach (or any other planning principle) in enabling the clear and consistent identification of the rights and protections of all life on earth in a changing climate (Hopkins 2011; Kenis 2016). However, networking with local authorities has always been a central part of the Transition Movement and it has produced tangible, climate-focused change for many urban communities across the world, including the aforementioned examples of Totnes, Bristol, Albuquerque and Adelaide Hills (Bristol Pound 2018; Cretney, Thomas & Bond 2016; Davis 2010; Hopkins 2012; Transition Network 2018; Transition Town Totnes 2018).

Overall, the recognition of non-human rights and protections in the Transition literature is weak. While ecosystem considerations motivate many writers and advocates of the movement, these motivations generally come from a desire to preserve the environment so that humans may continue to survive and thrive (Feola & Nunes 2014; Mason & Whitehead 2012; Transition Network 2018). In this thesis, little or no evidence could be found that suggests consideration is given to the rights and protections of animals beyond human concerns, aside from the positive benefits that are created by localising food and material supplies (or from similar environmentally-friendly initiatives) (Elton 2017; Transition Network 2018). These localised changes are often organic and/ or ethical, meaning the impacts on non-human life are reduced. Still, however, these positive impacts do not truly embrace or advance meaningful recognition of the rights and protections of non-human life. The Transition Movement as a networked, global movement of communities would need to formally

recognise non-human life within its guiding principles and frameworks to have true ecological recognition.

Participation has already been examined in many parts of this chapter, however it is important to analyse some key participatory questions to see if the Transition Movement is truly advancing ecological justice. As noted, the Transition Movement does not cater to all voices, demographics or sub-sections within society; its critics argue it is a heavily westernised movement and its participants tend to be relatively wealthy, white, already environmentally-conscious and politically active people (Connors & McDonald 2011; Stevenson 2012). This leaves many voices out of the urban planning process, particularly those who are more vulnerable such as low-income, non-white communities with little educational opportunities. However, as many of the movement's practical activities are community focused (tool-sharing, community gardening, etc.), all types of people can technically participate. It is more the governance and decision-making element of the movement where participation is limited to certain sub-sections of society who have the time, money and initial motivation to oversee a Transition initiative (Stevenson 2012).

Given that the values and interests of non-human interests are only weakly recognised by the Transition Movement, it is not surprising that the literature surveyed for this thesis suggests non-human interests are also left out of the decision-making and participatory elements of the Transition Movement (Ernstson et al. 2010; Hopkins 2011; Transition Network 2018). There is no example of direct non-human representation in decision-making within the movement, however it could be argued that most governance within the movement acts on behalf of the environment. While this may be true, again, the movement lacks direct action that serves non-human life and environments for their inherent value as opposed to human gain. Non-human interests are therefore largely left out of the participatory processes and do not have a direct and clear voice. Initiatives within the movement could consider funding a wider variety of projects, particularly environmental and animal conservation projects. This would broaden the scope of the movement beyond acting on primarily human concerns and better serve the rights, protection and voice of non-human interests.

Capabilities are the third and final element of the ecological justice criteria developed in this thesis. As already noted, examining capabilities requires an analysis of power and ability. Does the Transition Movement, and the urban planning initiatives that it advances, provide ecologically just capabilities to human and non-human life? The answer is yes, although somewhat limited in scope. Many of the initiatives and urban planning projects that have been inspired and managed by the Transition Movement have led to increased social solidarity, community wellbeing, and improved environmental conditions (Brunetta & Baglione 2013; Cretney, Thomas & Bond 2016; Elton 2017).

These improvements, as previously noted, neglect many subsections of society and non-human life, leaving them limited in scope and impact. However, the Transition Movement does directly enhance the capabilities of its participants in allowing them to become more climate resilient and just. Indirect positive benefits also impact non-human life, the natural environment and a slightly wider sub-section of the human population, although these impacts are not the primary concern.

Overall, the Transition Movement does not completely satisfy the criteria of recognition, participation and capabilities. However, the net benefits of the movement are positive and, in some cases for certain urban communities, profound. The Transition Movement recognises an urgent need to fundamentally rethink economic practices, consumerism and climate change. It does not yet officially recognise the full rights and protections of non-human nature; however, its goals and advancements indirectly benefit non-human life. Similarly, the participation and capabilities of non-human nature largely see indirect benefits from the movement. Social participation in the movement generally helps participants. Previous research has demonstrated that while some participants feel left out of the decision-making process or doubt the movement's ability to achieve wide-reaching change, people generally feel more socially connected, environmentally-conscious and capable when they are part of an initiative (Brunetta & Baglione 2013; Cretney, Thomas & Bond 2016; Davis 2010; Kenis 2016). The limited reach of the movement within society and social demographics limits its ability to foster participation and grow the capabilities of minority groups, or those who have a lesser interest in environmental sustainability.

3.6 SUMMARY

This chapter examined the Transition Movement as a case study of the intersection between urban planning, climate change and ecological justice. The philosophy and guiding principles of the Transition Movement, such as reducing oil-dependency, localising communities and adapting/mitigating climate change were analysed in theory and practice. The movement was then evaluated against the framework of ecological justice and the three central principles of recognition, participation and capabilities. This chapter argued that the Transition Movement could produce just and fair responses to climate change in urban communities. However, the extent and scale of this are significantly limited to a certain socio-demographic within society, generally relatively wealthy, white, middle-class people who are already environmentally conscious. Non-human life usually only sees indirect benefits from the movement and is very rarely its primary focus. These findings should not suggest the movement is performing poorly, only that the extent and scope of its impacts would need to be significantly enhanced to incorporate all people and non-human life if it were to produce profoundly just and inclusive urban climate responses. However, the Transition Movement is only

one way urban communities and cities can react to the challenges of fair and just climate outcomes. The next chapter examines a similarly motivated, yet different way cities could respond to climate change through the often top-down, managerial and technologically-driven 'Smart Cities' approach.

4 CHAPTER FOUR: SMART CITIES, URBAN PLANNING AND CLIMATE CHANGE

4.1 INTRODUCTION

This chapter begins by outlining the origins and purpose of Smart Cities and green growth by explaining and evaluating some of the critical technologies and motivations involved. Later, these technologies will be assessed in practice, considering how some Smart Cities in the real world have used smart strategies to reshape or redesign urban life. The chapter will then turn to some of the critiques and debates surrounding Smart Cities, offering a more critical reflection on them and highlighting some key concerns. Finally, Smart Cities will be evaluated against ecological justice to determine if they are a viable strategy to support a widespread, all-encompassing climate change response. In examining the role of ecological justice in Smart City urban planning, the recognition, participation and capabilities criteria will once again be used. This chapter argues Smart Cities offer an overall weaker variant of ecological justice than the Transition Movement, however Smart Cities could build much higher levels of ecological justice given their size and range of influence.

4.2 ORIGINS AND PURPOSE OF SMART CITIES

While the Transition Movement began as a grassroots, community-level initiative, the push for so-called 'Smart Cities' and green growth emerged through technological ambition and city-level governance (Picon 2015). Both the Transition Movement and Smart Cities are linked through their desires to reduce emissions and foster sustainability in cities. However, Smart Cities differ in many key ways that will be explored in this chapter, generally taking a more managerial, technological approach to sustainable development. As the emerging technologies of artificial intelligence, big data, machine learning and widespread improvements to information and communications technologies more broadly take hold of our personal and professional lives, cities and municipal governments are now utilising them in cities (El Fallah Seghrouchni et al. 2016; Greenfield 2017). These technologies will supposedly improve resource use and efficiency across all sectors and make people's lives easier. This links the Smart City ideal to climate change and urban/ environmental planning because living sustainably is a core tenant of Smart Cities (Song et al. 2017). It is believed that through technological innovation, Smart Cities can mitigate their emissions and adapt to any challenges left unsolved (Song et al. 2017). The development of Smart Cities is therefore inextricably linked with the desire for 'green growth', which may include renewable energy initiatives, the decoupling of emissions from economic growth or by shifting business practices to online, near-zero

emissions methods (Jackson 2017; Organisation for Economic Co-operation and Development 2013). Collectively, the push for smarter cities and greener growth is shaping many urban landscapes and has made some significant improvements to emissions levels and personal wellbeing, although it does present several drawbacks, including the role of private benefactors, protections around vulnerable or disadvantaged people and broader threats to democracy.

The term 'Smart Cities' was popularised in the early 21st century, rising to popularity alongside the personal smartphone, big data and the so-called 'Internet of Things (IoT)' (Greenfield 2017; Song et al. 2017). As these technologies become more sophisticated and take on more functions, Smart Cities are only going to become more intelligent and better equipped. In general, the term Smart Cities refers to cities and municipal governments using technology to find solutions to social, economic and environmental problems (Song et al. 2017). Information and communications technology becomes central to monitoring movements and congestion, optimising flow of people and goods through geographic information software, increasing energy and resource efficiency and making 'smart' decisions in policy and governance (Picon 2015). Essentially, as highlighted by Viitanen and Kingston (2014), the Smart Cities idea proposes that technology removes much of the risk and uncertainty that currently exists in cities by modelling and planning around disasters and designing in low-carbon, sustainable urban development.

Ultimately, the Smart Cities idea seems to envisage a world where technology enables smarter decision-making and planning, allowing better risk management, easier sharing of information, optimised transport systems and, in theory, fewer emissions (Cavada, Hunt & Rogers 2016; Song et al. 2017). While various types of Smart Cities exist, they all (to a certain extent) share the common attributes of technological advancement and environmental sustainability (Caragliu, Del Bo & Nijkamp 2011; Song et al. 2017). As noted through the work of Beatley and Newman (2013) on biophilic cities and by Cavada, Hunt and Rogers (2016), there are three key principles that a sustainable Smart City must follow. These are to reduce their ecological footprints and resource consumption, to deepen environmental connections and to enhance the quality of life, liveability and economic opportunities (Cavada, Hunt & Rogers 2016). These principles demonstrate the broad, yet ambitious goals of Smart Cities as they attempt to blend technological advancement with more traditional environmentalism.

Smart Cities are in a unique position to tackle climate change issues. Not only are they attempting to merge technology and environment, but as local centres of knowledge and power, they may be the perfect places to do just that. As relatively dependent, powerful and localised centres, cities are argued to be the ideal testing ground for climate action, so-called 'urban laboratories' (Trencher et

al. 2016). Whether this plays out within specific communities or across entire metropolitan areas, Smart Cities appear to be forward thinking, viable ways of reducing emissions and improving environmental outcomes. The critiques and debates over Smart Cities will be discussed later in this chapter, but first it turns towards some of the critical elements of Smart Cities in theory and practice.

4.2.1 Technologies and Terms Involved

To understand the complexities of Smart Cities and how they operate in practice (and what that might mean for climate change in cities), it is first essential to explore some of the key technologies and terms involved in Smart Cities and the purpose they serve. These technologies fundamentally underpin the Smart Cities idea and are often portrayed as some of the more viable ways to achieve green growth or foster sustainability in cities (Organisation for Economic Co-operation and Development 2013). Four key terms will be explored: big data and the Internet of Things, information and communications technology, geographic information software (GIS), and green growth.

Underpinning the whole Smart Cities idea is a wealth of information collected by city surveillance technologies such as security or traffic cameras, personal devices with built-in GPS units such as smartphones and all other connected monitoring devices, like weather monitoring systems, smart-home devices and online surveillance. Collectively, this wealth of data provides clear pictures for all kinds of activity in cities, including traffic movement and congestion, financial transactions, weather patterns and climate risks (El Fallah Seghrouchni et al. 2016). Applications include the relatively simple things one might take for granted, such as a smartphone GPS taking traffic patterns or accidents into account to route the fastest path, to more widespread applications like routing emergency response vehicles or monitoring exposure to air pollution at a population level (Greenfield 2017). It is the interconnectedness of so-called 'Big Data' that leads to the Internet of Things, which generally refers to the network of sensors, cameras, microphones and other data-capturing devices that has been enabled by wearable technologies, smartphones and the internet more broadly.

The second key technological element to the Smart City is communication. Heavily tied into the Internet of Things and Big Data, this broad term refers merely to how cities and citizens communicate. At a personal level, this may be via email, text or instant messaging. At a city/municipal level, information and communications technology may involve the vast interconnected networks that control traffic signalling or the use of government databases (Song et al. 2017). The Smart City idea relies most heavily on the freedoms of information sharing and communication to

strengthen city networks, engage with more people and collect robust data to make informed planning decisions.

Beyond personal data from smart devices, Smart Cities also rely heavily on environmental data when making planning, zoning and regulatory decisions. This is particularly relevant to climate change and sustainability because GIS software is often used to model climate and weather events and the risks associated with low-lying or flood-prone communities (Garnett & Adams 2018). Smart Cities are becoming increasingly reliant on GIS modelling to evaluate environmental hazards, plan disaster response paths and assess their solar/ renewable energy potential (Garnett & Adams 2018).

This thesis uses the term 'green growth' to describe an alternative to traditional industrial growth, where natural resources are used sustainably and planetary limits are acknowledged and abided to (Viitanen & Kingston 2014). Green growth encourages the development of industries and utilities that prioritise sustainable consumption with minimal environmental impacts. For example, we will always need to generate electricity, but green growth proponents would favour a solar network over traditional fossil fuels. Or new industries might look to digitise their practices to reduce travel costs and emissions. The use of the term 'growth' may be problematic for this phrase, as others have argued we ought to move away from growth-focused economics altogether if we wish to avoid climate catastrophe (Jackson 2017; Raworth 2017). The full growth debate is beyond the scope of this small 90-point thesis. For the sake of clarity, green growth will refer to the ambition or drive to foster sustainable and renewable practices in cities.

4.3 SMART CITIES IN PRACTICE

While some brief examples have already been given, this section will evaluate Smart Cities in practice to assess how real-world examples operate and tackle environmental challenges. Global examples will be evaluated, including much of the work coming out of Europe and continental America, as well as some global networks of cities like C40. Evaluating these response mechanisms will provide a greater understanding of how Smart Cities operate in practice, which will later be used to assess their limitations and consider how they may account for ecological justice.

One of the critical emissions areas that Smart Cities have made significant progress towards is transport. Recent research out of the London Environment Strategy (LES) found that Smart City framework improvements to transport policy were the only area, on average, to see an improved greenhouse gas emissions trend in London (Contreras & Platania 2018). While the LES is a very new initiative and much of the data used is based on projections, 'smart mobility' programmes are associated with the emissions reductions. In practice, this means an electrified public/ active

transport network and the broadening of electrified private vehicles (Contreras & Platania 2018). Like many other Smart City initiatives, it also involves the slow and steady increase in the efficiency of the entire system. In this case, it is about using traffic and travel data to optimise public transport routes and remove any underperforming or overly wasteful routes (Contreras & Platania 2018). Similar energy policy research out of Toronto, Canada revealed that light-duty passenger vehicles must go electric in all world cities between 2030 and 2050 if significant emissions reductions targets of up to 80% from 1990 levels are to be met (Mohareb & Kennedy 2014). However, a switch to an electrified transport system would require even the most renewable energy systems to double their output to carry the extra burden (Mohareb & Kennedy 2014). This means that Smart Cities will have to rapidly increase their renewable energy production and diverge from fossil fuels as soon as possible to ensure these transport emissions savings are genuinely green.

Energy use is a much wider area of focus for Smart Cities too, beyond transport emissions. One of the other key focuses is energy use in building stock, which accounted for 34% of final energy use globally in 2010 (Trencher et al. 2016). City governments generally have control over their own workplaces, some community housing and other public facilities. They may also have the power to create some change in private households through local bylaws (such as those around fireplace use in urban areas, for example) (Song et al. 2017). Making building stock more energy efficient retrospectively is often challenging and costly, however there is a growing call among Smart Cities to be designing new buildings for the future (Viitanen & Kingston 2014). This is because the buildings we design and build now will probably still exist 50-100 years into the future. They will exist in a very different time, when the impacts of climate change will likely be profound and much of the world may be unrecognisable compared to today. Smart Cities are realising this issue and have deployed a range of techniques. Simple improvements include designing smaller spaces, double or triple glazing windows and improving insulation (therefore reducing energy demand). More technologically sophisticated improvements include smart sensors to turn off electronics, lights and heating when the room is empty (El Fallah Seghrouchni et al. 2016). These energy efficiency improvements to building stock are central to Smart City development, however they do raise a reoccurring question: as energy efficiency improves, does that simply mean people will use more energy or put any saved money into other, more harmful emissions areas? This question will be returned to later in the critiques and debates section of this chapter.

As mentioned earlier in this chapter, another key focus is the use of geospatial, climate and area modelling. Smart Cities collect and review data constantly and this case is no different. All kinds of sensors and technologies, from LiDAR to satellites to traffic cameras are used to model potential risks and outcomes with the ultimate goal of making the city a more hospitable, safe and sustainable

environment (Garnett & Adams 2018; Picon 2015). These technologies foster the core ideas of Smart Cities because they seek planned, measured outcomes that are derived from technological advancement and big data. While these technologies may not directly inspire citizens to reduce their emissions or encourage an active climate adaptation within communities, they allow cities to implement climate-proof planning at scale (Viitanen & Kingston 2014). This further demonstrates the unique response that Smart Cities offer to climate change, as technologies such as LiDAR scanning are used to simulate and model environmental risks so that cities can better plan for worst-case scenarios. This kind of managed response, however, has generated criticism and debates which will be explored later in this chapter.

4.3.1 C40 Smart Cities: Examples of the Spread of this Approach to Climate Planning

The C40 Cities Climate Leadership Group (C40) was established in 2005 as a group of world megacities who agreed to cooperatively reduce climate pollution (C40 Cities 2018). The organisation now has over 90 participating member cities across seven geographic regions, including London, Beijing, Tokyo, Buenos Aires, Toronto, New Delhi, Hanoi and Auckland (C40 Cities 2018). The combined economies of the C40 network account for 25 percent of the world's GDP and represents over 650 million people, allowing its potential contributions to be both wide-reaching and impactful if implemented correctly (C40 Cities 2018). While the C40 network is not specifically a Smart Cities network, choosing to focus more on climate action, it strives to *"collaborate effectively, share knowledge and drive meaningful, measurable and sustainable action on climate change."* The overlapping goals are clear as both C40 and the wider Smart Cities idea favour technological change, measured outcomes, shared knowledge, strong communication and sustainability. C40 also hosts many Smart City events and places a strong emphasis on energy efficiency and conservation, as well as strong communications networks (C40 Cities 2018). The network is governed by its chair, steering committee, the board of directors, and partners. The chair and steering committee are elected and rotational respectively (C40 Cities 2018). The governance is broadly democratic and as C40 does not have direct control over cities (which is left up to individual mayors and municipal governments) its representative measures are less relevant (C40 Cities 2018).

The core strength of C40 appears to be its ability to network, share ideas and test new technological innovation. As Trencher et al. (2016) highlight, C40 has successfully implemented a range of smart, energy efficiency measures through collaboration and internal cost-sharing. Trencher et al. (2016) again stress the importance of the role of the city in this action, as cities have their own direct control over local laws and built infrastructure however they can cooperate to communicate and inspire change. A reported 30 percent of climate actions in C40 cities are delivered through collaborative efforts between cities and research has proven that cities are three times more likely

to take climate action if a formal goal or target has been created (C40 Cities 2018). The kind of smart communication and information sharing that is created and enabled by Smart Cities is therefore vital in producing more effective climate action in this case. If nothing else, the C40 model shows that smart and effective engagement between cities can improve environmental outcomes and act as one way to reduce the impacts of climate change. However, the broader Smart City idea does suffer from several flaws and critiques which will now be explored in detail to determine what threats the idea poses to effective climate action.

4.4 CRITIQUES AND DEBATES IN THE SMART CITIES LITERATURE

This chapter now presents and explores three fundamental criticisms of the Smart Cities model. Firstly, Smart Cities may not be working as intended or go far enough. Secondly, Smart Cities may fail to engage appropriately with both people and politics. Finally, Smart Cities worsen injustices and facilitate commercial and data exploitation.

4.4.1 Do Smart Cities Create Truly Meaningful Change?

This point mainly critiques Smart Cities by questioning whether the Smart City model goes far enough to address the root causes of climate change, such as over-exploitation and excessive consumption. One noteworthy point here is the argument that energy efficiency improvements may actually worsen environmental outcomes as some evidence suggests as efficiency improves, consumption increases and total demand remains the same or worsens (Mohareb & Kennedy 2014).

At a deeper level, however, Smart Cities could be dismissed because their core values do not address key climate concerns. While information sharing, digital economies and energy improvements are all valid steps towards reducing emissions profiles, they do not go far enough in addressing central concerns such as dematerialisation (Mohareb & Kennedy 2014). In this sense, Smart Cities appear to be more focused on how we can maintain our current lifestyles while also lowering emissions, instead of tackling the more profound task of entirely shifting the way our economies and societies function to protect the planet and provide a safe, liveable climate. The study mentioned above by Mohareb and Kennedy (2014) found the global cities will likely find it very difficult to meet the necessary 80-95 % emissions reductions targets that are required of them to foster a healthy and safe climate through technological advancements and change alone.

Smart Cities may therefore fail to meet their targets as they adopt some strategies that do not provide the widespread change to resource use and materialisation that is required of them. As Prendeville, Cherim and Bocken (2018) demonstrate, material consumption has grown eight-fold over the last century and will triple again by 2050 under current and predicted growth rates. This is

the key factor that is missing from Smart Cities as they attempt to navigate towards a safe climate. As they fail to adequately address dematerialisation, Smart Cities may fail to reach their ambitious goals. Furthermore, any reliance on carbon capture storage, a technology which aims to remove and store carbon from the atmosphere, is nothing more than wishful thinking at this stage as it cannot be adequately replicated at scale (Cavada, Hunt & Rogers 2016). Sole reliance on technology and digitisation ultimately seems as though it will not be enough to achieve the change that is required.

4.4.2 Smart Cities Neglect People and Politics

This critique builds on the underlying theme of the previous one; that the fundamental drivers of Smart Cities overlook what potentially matters most in any attempts to save the climate. In this case, rather than neglecting the need to shift core values, Smart Cities neglect citizens and politics.

Even though most Smart Cities are led by mayors and governments who value technological innovation and sustainability, and that these decisions are entirely political, the long-term political strategy of Smart Cities is unclear and generally weak. Contreras and Platania (2018) affirm this point by stressing that the long-term policy architecture of Smart Cities is at risk as it is not legally or politically binding, meaning the ideology and will of successive governments and leaders can easily reverse any changes made. As Smart Cities action is generated at a government level, it can be extremely effective and well-funded, however unless binding targets can be made that stretch across the political spectrum and cannot easily be reversed, a certain amount of political neglect will always be present in Smart Cities.

Smart Cities often favour a top-down, managerial or expert-led approach to tackling climate change and sustainability issues (Viitanen & Kingston 2014). While this may be required for technical processes such as LiDAR scanning or climate modelling (and very useful in doing so), it neglects the role of the citizen and fosters a more passive citizenship that is seen in wider 'smart' models and 'smart' governance (Hayward 2017). Passive citizenship refers to citizens being acted upon rather than having a real voice and impact within their communities and in politics. Furthermore, the active input of citizens is turned into a kind of passive democracy, where experts lead decision-making processes and individuals may be solely reduced to their purchasing power and not engage in true, active citizenship (Hayward 2017). While technological innovation will always be highly valuable and much needed across all industries, Smart Cities do raise serious concerns about citizen engagement and the democratic security of civic life. This leads to the question, what happens when citizens are disengaged through the Smart Cities process and what might go wrong if we rely on it as our primary course of climate action?

4.4.3 Fostering Greater Injustices and Exploitation

Smart Cities may also worsen the lives of the most vulnerable, dehumanise urban politics and policy, and facilitate the manipulation and exploitation of personal data and commercial finance. While these outcomes are closer to worst-case predictions than eventualities at this stage, there is some evidence to suggest that the downsides of Smart Cities could be detrimental to human and environmental wellbeing (Viitanen & Kingston 2014).

The key problem here is one of mismanagement and a lack of fair, evenly distributed environmental outcomes. Some areas of urban centres will likely miss out on smart optimisations, savings, and planning which will broaden the gap between advantaged and disadvantaged populations and increase the vulnerability of those already suffering (Viitanen & Kingston 2014). While it may seem slightly pre-emptive to assume this given that Smart Cities are relatively new, a historical pattern of environmental injustice (as discussed in chapter two) suggests that these smart developments will likely be distributed no differently to any other environmental benefit or risk. At the very least, this is a message of caution to Smart City planners, heeding them to consider the ramifications of unequal and inequitable resource distribution. At worst, this is a call to account for vulnerable populations already suffering and to not leave them even further behind. Furthermore, as city planning and policy becomes 'smart' it runs the risk of dehumanising itself (Viitanen & Kingston 2014). The so-called 'simulated city' may neglect the human elements of citizenship and wellbeing and instead treat people merely as statistics to be modelled, calculated and simulated.

Injustices and exploitation may also arise in the commercial and financial sectors, particularly where private companies are involved in the collection, analysis or communication of big data (Greenfield 2017). Personal privacy and security tend to be a risk factor when social data is used, such as personal communications, but city-level data can still be exploited or misused in the wrong hands. As Viitanen and Kingston (2014) argue, the more 'smart' citizens integrate communications technologies into their daily lives, the greater the demand for more smart products and services, which ultimately increases the risk of big data commercial exploitation. As communication, location and travel data become increasingly connected within the internet of things and more cities look to use it to streamline their transport and data networks, the cybersecurity risks become clear. These risks have run-on effects on social justice, wellbeing and security and must be considered a key threat to Smart City planning. Above all, these criticisms demonstrate that Smart Cities present a unique set of challenges unlike the Transition Movement or other less technical responses to climate change and sustainability. Considering these challenges, how do Smart Cities relate to ecological justice and is there any evidence to suggest that ecological justice is part of a Smart City agenda?

4.5 USING ECOLOGICAL JUSTICE TO EXAMINE SMART CITIES

The above theoretical review and case study of Smart Cities has highlighted a range of criticisms. While planning around environmental risks and attempting to improve people's lives through technological innovation and efficiency is central to the Smart Cities approach, its top-down style can result in further marginalisation and exclusion of vulnerable communities. The role of non-human nature is not a focus for most Smart Cities, who are instead driven by data, technological innovation, environmental planning and social outcomes.

But could Smart Cities advance any aspects of ecological justice? As an urban planning approach to environmental sustainability and climate change the Smart Cities approach appears to be placed in a dynamic and potentially highly-impactful place. The data-driven approach to Smart Cities enables them to plan and model for future environmental risks to a highly accurate level. Furthermore, the creation of Smart City networks like C40 allows cities to share the costs and benefits of the Smart City approach. This potentially makes the Smart Cities approach to mitigating and adapting climate impacts more affordable, better networked and therefore more likely to be a success. Unlike the Transition Movement, the Smart Cities approach has a much greater ability to influence urban planning at a city level (potentially at an even larger scale across regions and between cities too). This is largely because of its top-down approach to planning and the power that government-level action has over cities compared to some community action. As already noted, however, this style of approach can also worsen the lives and living environments of those already most vulnerable (Viitanen & Kingston 2014).

4.5.1 Recognition, Participation and Capabilities of Smart Cities

Here it is vital to consider the three key elements of ecological justice again, as outlined in chapter two. For something to be ecologically just, it must consider:

1. Recognition – of climate change issues in urban planning, of the rights and protections of all life on earth, and of the need to build just and fair outcomes.
2. Participation – the ability for all interests to be heard, to have a voice and to influence decision-making.
3. Capabilities – having the power and capacity to live a happy and flourishing life within planetary limits and without harm.

Recognition of climate change and wider environmental challenges is a key feature for Smart Cities. While economic incentives for planning around disaster and increasing efficiencies are also clear, the desire to adapt and mitigate climate change remains significant. Smart Cities ultimately recognise

the challenges climate change poses to economic, social and environmental systems. This recognition is witnessed in most key Smart City projects, including renewable energy initiatives, the electrification of private and public transport networks, the use of information systems to plan around environmental threats, and emissions reductions through smart urban planning and energy efficiency improvements (Contreras & Platania 2018; Mohareb & Kennedy 2014).

Recognising the rights and protections of all life on earth is a clear weakness within the current Smart City model. As a top-down, technological approach to urban planning, the Smart City model fails to acknowledge the role of non-human life. While Smart Cities may involve environmental features such as riparian planting and urban tree-cover for human gain, they almost never recognise the rights and protections of animals in their approach.

Participation in the Smart Cities model is arguably worse than in the Transition Movement. Because of the very top-down, managerial and expert-led approaches of Smart City decision-making, citizens are frequently left out of the process. This often results in disengaged, apathetic or frustrated feelings, particularly from those who are already vulnerable or feel disempowered. This lack of citizen participation is caused by several factors including those already already (top-down management and disengagement) as well as the often highly-technical nature of smart development which can exclude the average citizen due to its complex nature. Even in highly technical situations, however, civic participation is always possible, and this should be more highly sought after in Smart Cities if they wish to create truly just and fair climate transitions.

Again, non-human life and natural environments are left out the Smart Cities approach. Benefits to non-human life through the Smart Cities approach resemble that of the Transition Movement; they are indirect benefits that do not primarily account for non-human participation but often offer some gain as a secondary effect. The core design of Smart Cities, as urban, highly managed, technical developments does not cater well to non-human voice and participation because natural environments cannot be designed or simulated in the same way as urban environments. Non-human participation may require a representative human voice in decision-making processes to help ensure its flourishing.

Capabilities are the final principle to be examined and one which offers a very mixed result. When Smart Cities work well, they can greatly enhance the economic, social and environmental capabilities of people's lives. Efficient green transport networks and cheap, accessible forms of communication and information sharing allow people to live low-carbon, happy and connected lives. In practice, however, Smart Cities present many flaws that prohibit this vision. These flaws include the marginalisation of communities who are left out, the misuse and manipulation of data, and the

previously mentioned barriers to participation and decision-making which prohibit citizens from truly living up to their own capabilities. Non-human capabilities are generally not considered at all in the Smart Cities approach, presenting another serious barrier to ecologically just and fair urban climate outcomes.

Overall, Smart Cities could transition large urban areas towards low-carbon, ecologically just futures. Despite being inspired by similar goals as the Transition Movement, the Smart Cities approach takes a more managerial, technical position. This puts Smart Cities in a more powerful position than Transition Movement initiatives as it is often local governments who are making or implementing Smart City initiatives with significantly more financial resources and political power at their disposal. However, Smart Cities lack many of the core principles of ecological justice as outlined in this thesis. Recognition of environmental challenges is strong, but recognition of the rights and protections of non-human life is weak. Participation for both human and non-human interests is a serious challenge, particularly from a decision-making perspective where it is too easy to marginalise both citizens and planet. Capabilities are broadly enhanced through Smart City development at a city-level, but marginalised groups within society and non-human interests are often left out and see little or no benefit.

4.6 SUMMARY

This chapter examined the theoretical origins, practices and technologies used by Smart Cities while also evaluating some of the most significant critiques of the approach. It seems clear that if we are to plan for just and fair climate outcomes in cities, we need technological innovation and smart strategies. However, in using the recognition, participation and capabilities criteria for ecological justice to evaluate Smart Cities, it becomes clear that the smart approach needs to see some significant change. Smart Cities value climate change planning very highly and can produce city-level outcomes that benefit people and planet, however an overtly top-down approach to urban planning excludes or ignores many of the rights and protections of communities, citizens and non-human life. To further assess how these challenges manifest in practice and to provide an extra level of examination, this discussion now turns to some indicative interviews with activists, local leaders and decision-makers.

5 CHAPTER FIVE: INTERVIEW RESULTS AND DISCUSSION

5.1 INTRODUCTION

This chapter reports on the results of six indicative interviews with public-facing community leaders, advocates and locally-elected representatives. Key findings of the previous chapters are summarised, and the methods and structure of the interviews are also discussed before turning to the results. The examination of the interviews will draw on key findings and common themes throughout all six interviews to validate the findings of my interpretation of the literature outlined in previous chapters. I tested my assessment of the effectiveness of the Transition Movement and Smart City approach through pilot interviews. While the scope for field research is limited in a 90-point thesis, I was particularly interested in asking experienced planners and community advocates about their assessment of the extent to which these two approaches advanced the principles of recognition, participation and capabilities in urban climate planning. The role of ecological justice and fair outcomes for people and planet features heavily in the discussion. Finally, this thesis is concluded with an examination of how the two approaches to urban planning examined in this thesis require much greater levels of ecological justice if we are to build and design urban communities that flourish in a changing climate, as well as further discussion around future research, limitations and implications.

5.2 A REFLECTION ON THE FINDINGS FROM THE LITERATURE REVIEW AND CASE EXAMPLES

To summarise the results from chapters three and four, this discussion has assessed both the Transition Movement and the Smart Cities approach to urban planning against criteria for an ecologically just approach to urban planning. Neither approach was entirely successful. However, both approaches offer unique and innovative means of urban planning around climate change and have seen considerable opportunity for greater success despite their weaknesses.

The Transition Movement offers a community-focused, bottom-up approach to urban planning and climate change. It explicitly targets fossil-fuel dependency, localisation and climate change. The movement has grown to a global scale, although most current initiatives are based in the developed, western world. Key strengths of the movement include its resilient, community focus and ability to adapt to local challenges with localised solutions. Key weaknesses include a lack of diversity and a potentially weak political stance which may leave it unable to effectively influence decision-making outcomes (Cretney, Thomas & Bond 2016; Davis 2010; Feola & Nunes 2013; Stevenson 2012). The

Transition Movement has a relatively strong level of recognition, acknowledging the severity of climate change and the need to protect life on earth and produce fair outcomes. Participation within the movement is often limited to white, middle-class, educated people with existing interests in environmentalism. No noticeable or significant voice is given to non-human interests beyond their gain for humans. Capabilities of human and non-human life are supported by the Transition Movement, although they are largely indirect benefits beyond the predominantly white, middle-class, educated groups of participants.

In contrast, the Smart Cities approach offers a top-down, technological way of planning cities around efficient, intelligent and environmentally-conscious design. It thrives on technological innovation and planning across environmental risks, transport, service-provision and most other aspects of society. It is global by nature and relies heavily on information-sharing and telecommunications. Key strengths include its ability to create wide-reaching change within urban environments thanks to its strong connections within governing bodies and its innovative potential. Key weaknesses include its managerial, top-down stance that can act to exclude interests and communities, and a potentially weak ability to foster meaningful change (Mohareb & Kennedy 2014; Viitanen & Kingston 2014). The Smart Cities approach has a reasonable level of recognition, acknowledging the need to address climate change in cities, however it does not acknowledge non-human life here. Participation in Smart Cities is also challenging for average citizens as the process has tended to be expert-led and minority communities can be easily excluded. It may not enable low-income people who are unable to connect to the internet to participate either. Capabilities can be greatly enhanced for human lives and non-human environments if the approach is adopted successfully, however true ecological justice requires the issues of participation and recognition to be fixed before capabilities can be holistically enhanced. From this review, the Smart Cities approach offers less ecologically just outcomes compared to the Transition Movement. This is largely down to a lack of community involvement in the Smart Cities approach, which ultimately demonstrates a participation and recognition deficit.

5.3 INTERVIEW METHODS AND STRUCTURE

As outlined in the methods section of chapter one, I wanted to validate my assessment with interviews with key informants. Within the constraints of this thesis, six potential interviewees were selected based on their experience in leading either community advocacy, leadership or local government work in and around either Smart Cities, transition towns or both. Interviewees were contacted via email and agreed to either meet in person or participate in a phone interview of approximately 15-20 minutes in length. All six interviewees permitted to have their interviews

recorded to supplement hand-written notes per the University of Canterbury's ethics procedures and with approval from the low-risk Human Ethics Committee. All interviewees also consented to information and direct quotes taken from their interviews to be used in this thesis so long as it was presented under a pseudonym to protect their identities. All interviews were conducted in January 2019 at a time and place that was determined by the participants to ensure they felt comfortable and safe during the interview process.

The interviews were semi-structured, featuring three key questions that were slightly adjusted to fit the needs and experience of the individual participant. Interviewees were given information and consent forms prior to the interview process and were also briefed before the interview on the main goals and interests of this research. Interviewees were given an opportunity to guide the interview towards their strengths and to add any further information with a fourth, open-ended question at the end. Supplementary questions were asked during some interviews to expand on the ideas and themes raised. All the following questions and their corresponding answers were transcribed following the interviews to allow accurate and precise quoting/ use of the data collected this discussion. The main questions asked of each interviewee were approximately structured as follows:

- 1) In your view, how does a transition towns/ Smart Cities approach enable participation?
Thinking about community participation, participating in urban planning and decision-making.
- 2) How can these approaches help us better understand and recognise the rights and values of different interests – environment, business, communities and cultures?
- 3) Should these approaches be successful, what kind of support might we put in place to allow them to flourish and strengthen the capabilities of people and planet?
- 4) Any other points I should add about effective urban planning for just and fair climate outcomes?

5.3.1 Roles and Experience of the Interviewees

Interviewees have been assigned a random pseudonym, however it is important to note their experience and roles here before commencing with the discussion. Six people participated in total, three of whom had significant experience with Smart Cities, while the other three had significant experience with transition towns/ transitional approaches to urban planning. Two of these participants had significant experience in both fields. The following six people were interviewed and anonymised for this research:

- a) Wiremu – a locally-elected government representative with experience in urban planning, climate change and technology.
- b) Phoebe – a foresight and innovation consultant with global expertise.

- c) Maddox – a locally-elected government representative with experience in community-development, transport, the environment and sustainability.
- d) Laura – a locally-elected government representative with experience in finance, technology and the environment.
- e) Louise – a community advocate with experience in strategic development, leadership and community evolution.
- f) Stan – a social entrepreneur and cultural activist with experience in placemaking.

5.4 RESULTS

The discussion now turns to examine key themes and trends in the qualitative data and how these align with the preliminary findings of this research and the recognition, participation and capabilities principles of ecological justice and the wider case studies.

5.4.1 Climate Change and Ecological Justice Responses

When briefed on the overall purpose of this research, all six participants acknowledged the need for better climate change adaptation and mitigation strategies and eluded to ecological justice. A call for change, new ways of thinking or imagination was an underlying theme sewn through all six interviews, whether Smart Cities or the Transition Movement was the core focus. Wiremu described how we need to treat our planet and our cities as living entities, and this shift in thinking and treatment would enable us to think smarter and more carefully about planetary health – just as many people do with their own personal health and fitness.

“Because if we treat our planet or our city as an organism – which it is – then you’ll probably be more interested in looking after it. But, we treat our planet as an asset. So once we stop treating it as an asset and start treating it as a living entity then I think we’ll be a bit more careful about how we treat it. Just like fitness and our body, isn’t it?”

Wiremu.

In a similar vein, Stan called for a wide-reaching shift in how we structure our societies, economic activity and environmentalism in the wake of profound challenges like climate change.

“I think the biggest problem we face in a way... or maybe the pre-problem we face is the failure of imagination. We, for so long now, we’ve only really had one model of social structure that we look at and accept as valid - the sort of western capitalist democracy thing and there’s a few variations on it but for the most part we have a pretty static and uniform view of what society could be and in order to solve some of these big ecological,

environmental, economic problems that are on the horizon, I think it's going to require entirely different kind of structures of society and ways of working that nobody has envisioned yet."

Stan.

These two comments from people of different backgrounds and experiences both had a high level of recognition and awareness around climate change and urban planning, and both felt there was a need for profound change. While not directly mentioning ecological justice, these interviewees were calling for a new approach to urban planning in cities that has a resonance with ecological justice. Wiremu called for the need to view our planet as a *"living entity"* while Stan acknowledged the need for new thinking to solve complex problems. An urban planning approach built on the principles of ecological justice could deliver the kinds of fair and just ecological and social outcomes that these leaders and community advocates are calling for.

5.4.2 Strong Calls for Community-based Solutions

When considering the communitarian, Transition Movement approach to urban planning, four participants explicitly mentioned that a community-driven approach works best for building resilience, climate awareness or in creating meaningful change. Maddox noted the need for strong, connected and localised communities.

"There's lots of research around the fact that more connected communities are much more resilient to any of those future shocks and stresses that come and hit us at any point, so if you've got a more connected community, they know where they're more vulnerable members are, they can help distribute food and welfare and do that wellbeing stuff as well, as we have an ageing population."

Maddox.

Louise and Stan both commented on the strengths of a community-focused approach to urban planning. Louise highlighted that the transitional style of approach to urban planning and evolution enables people to get involved, make mistakes, pilot new ideas and test innovative solutions. This enables participation, one of the core principles of ecological justice, to flourish in communities.

"One way that it helps empower people to be involved is that it gives a license to make mistakes and to test ideas without having to commit to them permanently, so people are more likely to try stuff out and be innovative. So that encourages participation because there's not such a fear of getting something wrong... So transitional gives you the license and room and latitude to learn from mistakes... So pilots and exemplars help

a lot in transitional projects to incorporate and experiment with different interests within society. It can be those things being used as testing grounds.”

Louise.

Stan added further to this discussion by highlighting the need to build active citizenship in communities if people are to flourish. This, he argues, can be achieved through transitional style projects that are public-facing, active, and contribute positively within the community. These ideas are what motivate the Transition Movement and are readily seen in much of their work, as demonstrated earlier in this thesis.

“...I think an important part of it is that things are public-facing and happening in spaces where people see them and encounter them and so we try to model a sort of active citizenship... actually there are lots of ways that you can be a bit more proactive in contributing to the community and so we try to model that by being active citizens ourselves and sometimes, then, we can also offer a whole range of support services and facilitation and partnerships and things like that so that we can help other people and organizations step into that role and help shape the places they live.”

Stan.

From a Smart City perspective, Laura also highlighted the need for community involvement and community-led development, however in this case it was argued that data and information would form the backbone for this kind of urban development.

“So I'm much more in favour of community planning and community-led development because it's different from place to place but the only way to deal with that is to have better information and have stronger community networks, community boards I think will become much more important in terms of how the community actually responds to particular issues, so we've still got a way to go. Our planning processes are still quite centralised and a little bit heavy handed and not really sort of community-focused when it comes doing climate issues.”

Laura.

However, one key flaw in these community-based solutions was also highlighted by Laura. In line with the preliminary findings of this research, Laura noted that most types of activism tend to be captured by a certain demographic within society – generally, a white, middle-class, relatively well-off group.

“We're constantly seeing in most areas of activism that it still tends to be a fairly middle-class type approach and a lot of communities which are lower income, more diverse in terms of ethnic backgrounds - refugees for example - or ethnic communities where a concept that's a traditional mainstream, middle-class concept of engagement - you know, activism that's been practised for a long time doesn't actually fit with the cultural norms or practices of other communities. So that can be challenging, so you actually tend to just get the same voices which is not that helpful.”

Laura.

5.4.3 Weaknesses of Top-down Approaches and the Need for Robust, Supportive Data

In the previous quote Laura also mentions the managerial, top-down style of Smart Cities. This criticism of the Smart City approach was evident throughout earlier discussions in this thesis. The challenge of a top-down approach to urban planning and climate development was also mentioned by Phoebe, who clearly expressed that the most common style of Smart City development fails to encourage participation and recognition of people and communities.

“I would suggest it [a Smart City approach] doesn't [encourage participation], simply because the way most people think about Smart Cities is probably vendor driven and company driven, so organisations like Cisco and IBM want to do some sort of top-down, sort of hand of god approach... No, not top-down. It will never, ever provide what you want because you will need to empower people. You can sponsor the approach to lay the foundation at the top, but you have to do it from the bottom... I think they [Smart Cities] can be very powerful but only if you have the right data, so if you can't measure it, you can't action it.”

Phoebe.

In the previous quote, Phoebe also discussed a theme shared with five out of the six interviewees – the need for robust data and evidence. In a Smart City context, all interviewees who commented on smart urban planning explicitly mentioned the need for robust evidence and good data. Not only to ensure that smart development is effective and able to achieve its goals, but also to encourage citizens and decision-makers to use a Smart City approach because it is supported by high-quality data and can demonstrate that it works. This need for high-quality data was also expressed clearly in the literature review and case study of this research. Maddox provided an example of how high-quality data is vital in supporting effective Smart City developments and equally important in raising awareness among citizens to support them in making evidence-based decisions.

“...because originally with the transport stuff we were using a lot data at the beginning from overseas cities and we were saying this is what's worked in other cities, we would like to do this here because that's what best practices and then there's a lot of calls for 'oh but we're not Montreal, we're not Vancouver, we're not Copenhagen, we're not Melbourne' - that kind of thing. But now that we've got all our data that's coming through in a range of different areas we can say, no we're not those cities but it's working here too and so the backlash now about the whole 'we're not Melbourne, we're not Copenhagen' thing, that argument almost completely disappeared because we've got really good local data.”

Maddox.

Wiremu argued that high-quality data is essential for climate change mitigation and adaptation, especially for targeted emissions reductions strategies. This was argued as a strength of the Smart Cities approach. Unlike the other participants who commented on Smart Cities, Wiremu did not mention the weaknesses of the top-down style of approach, instead focusing on how data can enable a more climate resilient future. Here, Wiremu argues that accessible, high-quality data and smart developments like electric vehicles enable people to make informed, individual decisions about their energy use and emissions profile – something that was also touched on by Laura.

“In terms of data, so with technology we can actually start to model what could and could not happen and what are the best solutions for emissions reduction... I think that people want to know where they sit and with an electric vehicle, with technology you can actually see how much energy you're using, where it's being sourced and it means that your individual is actually more aware of their emission profile...”

Laura.

5.4.4 Governance Barriers to Smart City and Transitional Urban Planning Approaches

Three out of six participants also highlighted several governance barriers that have limited the ability for these urban planning approaches to foster recognition, participation and capabilities in their approaches. Concerning wider climate change planning, Wiremu noted the issue of trying to plan for long-term climate impacts within a three-year electoral cycle and within existing budgets.

“All these tend to cost a lot - a lot of money. Money which is probably all new money, and as civic governments with only three years would rather say: let’s not hike up rates, let’s not borrow more money, let’s just make it the problem of the next elected government.”

Wiremu.

Phoebe highlighted the need for greater education of public officials and decision-makers who can be left behind by the technological innovations of Smart Cities. Ensuring officials and decision-makers are aware of these changes ensures they can act appropriately towards them. This is vital for both approaches to urban planning. As also noted here by Phoebe, the aforementioned calls for greater community-based approaches cannot be met if decision-makers do not only understand smart innovation, but also enable communities to understand it too.

“Probably education of officials and environmental agencies to be honest. The technology is so cheap, the software is available, the cloud services to process it is all there, there’s enough smart geeks out there that are open towards projects but typically city officials are the ones stuck in this idea that we control that information.”

Phoebe.

Further relating to governance barriers that restrict people from participating in these urban planning approaches, Stan believed that local consent processes were holding people back and stifling imagination and innovation. Speaking specifically on transitional projects and temporary attractions Stan noted that, in his own experience, small and temporary structures were put through the same costs and planning consent processes as large, permanent developments. This barrier to participation and engagement leaves transitional projects in a difficult spot without outside investment or other government/ community support.

“I mean, we have advocated for quite some time about what let’s say, some regulatory reform in council where small pop up projects don’t have to go through the same consent process as a fully consented commercial building that’s being built... We went through the same process, same cost for that process, and timeline for that process and that’s a little absurd and the same thing too if you’re building a twelve square metre little pop-up whatever. The consent process is the same as if you’re building a 10,000 square-metre warehouse - same cost, same everything.”

Stan.

These barriers between decision-makers and communities need addressing if true recognition, participation and capabilities are to flourish in urban climate planning. This thesis will now turn towards a discussion of these key themes, considering the role of ecological justice and wider implications on Smart Cities and the Transition Movement.

5.5 DISCUSSION

Overall, the results indicated that locally-elected leaders, community advocates and practitioners interviewed in this study were very aware and concerned about many of the issues highlighted in the literature review and case studies of this thesis. Concerns around community participation and recognition featured heavily in all interviews. This was to be expected for conversations around the community-focused transitional work, however, was somewhat unexpected in discussions with Smart City planners/ practitioners. Two out of three Smart City planners/ practitioners criticised their own approach as lacking in community involvement or requiring significant changes. All three responses that focused on transitional approaches to urban planning only acknowledged the strengths of involving the community and inspiring achievable, practical change. One participant noted the very middle-class nature of most forms of western advocacy and activism, a particularly strong pre-existing criticism of the Transition Movement.

Four key findings can be surmised from the interviews:

- Urban planning around climate change requires greater innovation and needs new approaches to solve new and emerging problems.
- Community-based solutions are strongly desired.
- Top-down approaches can neglect the needs of people, but data-driven and evidence-based governance is still effective in other areas of urban planning and design.
- Removing the governance barriers to urban planning and connecting the voices of decision-makers with communities is vital.

The overall findings of the pilot interviews therefore largely support the preliminary results of this thesis. Community-based approaches to urban planning and climate change, namely the Transition Movement, enable greater social cohesion and community wellbeing. These approaches tend to be more flexible and community-operated, meaning local interests are better recognised and people are more able to participate in the process. However, they can be captured by certain demographics within society or held back due to their inability to connect with government sources and decision-makers.

Smart Cities were largely regarded as sources of great innovation with wide-reaching impacts across communities and cities. The need for high-quality data was a necessary precursor to any of those positive impacts. The top-down, managerial style of the Smart Cities approach was acknowledged as a significant weakness in contemporary Smart City development, in line with the preliminary findings of the literature review in this research. Discussion around Smart City development had a stronger focus on service provision, such as transport links or waste collection, whereas discussion around transitional initiatives tended to prioritise people, communities and wellbeing. This is indicative of the wider trend between Smart Cities and the Transition Movement.

The overall calls for change, innovation, community participation and recognition of all voices featured in all interviews in various forms. Given the predicted scale and intensity of climate change, calls for significant innovation that brings people and planet along with it seems necessary. This is where the role of ecological justice aligns with the ambitions and desires of the interviewees and the planning approaches they support and practice. As already discussed, ecological justice offers a nuanced way of evaluating urban planning practices to produce just and fair climate outcomes. It provides a new way to evaluate urban design and community participation while also incorporating the rights and protections of non-human life – something that is rarely touched on in the wider literature as well as in these pilot interviews due to how little it currently registers in climate change debates and on the minds of climate/ urban planning advocates and practitioners.

5.5.1 In what ways and to what extent can Urban Policy and Planning that addresses Climate Change also foster and advance Ecological Justice?

This is the central research question to this thesis and one that can now be readily answered by examining the insights from the literature reviews and interviews. It is best answered in two parts, one for each urban planning approach examined in this thesis.

The Transition Movement fosters and advances ecological justice through strengthening community participation and its clear recognition of climate change issues. It allows people to engage in environmentally-conscious and socially-connected initiatives that have a net positive impact on people, non-human life and the planet. While barriers to entry are relatively low in transition initiatives, they are often geographically and socio-economically limited to predominantly white, middle-class groups. This, alongside a lack of direct voice and representation for non-human interests, somewhat limits the Transition Movement's ability to foster true ecological justice.

The Smart City approach fosters and advances a significantly lower level of ecological justice than the Transition Movement, despite its noticeably stronger and more influential connections between cities and decision-makers. The Smart City approach can innovate and plan around climate change at

a level the Transition Movement would be unable to achieve. However, its top-down approach and its tendency to be expert-led and managed results in it presenting barriers-to-entry that are too high for many communities and cities to become involved with it. While data-driven innovation will undoubtedly be a feature of future urban planning around climate change risks and mitigation/adaptation, it does not provide a high enough level of ecological justice to be the lone or primary response method. Neither of the two approaches examined in this thesis would provide true ecological justice alone. However, the community-focused approach of the Transition Movement, with added rights and protections for non-human life, could be supported by data-driven Smart City methods to flourish and foster ecological greater justice.

5.5.2 Limitations and Further Research

First and foremost, this study is limited in scope. As a 90-point thesis, this research examined how urban planning approaches to climate change foster and advance the principles of ecological justice. Further research would likely examine how other approaches to urban planning, such as informal settlements, impact climate outcomes and whether they foster greater ecological justice than the approaches examined in this thesis. Further research is also needed to develop new and emerging principles of ecological justice. As a nuanced and uncommon approach to urban planning and climate change, further research would help to popularise and solidify ecological justice within the wider body of literature and hopefully bring it to the attention of policy and decision-makers.

The primary qualitative data collected for this research served as an indicative sample of locally-elected government representatives, planning practitioners and community advocates. While useful in validating the preliminary findings in this research and in offering a new and original contribution to the wider field of ecological justice, future research should focus on collecting a wider range and variety of interviews and primary data. This would help to validate initial findings and provide a more robust understanding of ecological justice in urban planning.

Further research should also explore the role of ecological justice in the non-western and/ or developing world. The two approaches in this thesis are predominantly western and relatively affluent methods of urban planning. Using the principles of ecological justice to evaluate urban planning methods that are predominantly non-western could provide an opportunity to find solutions that better stretch across cultures and societies and therefore provide greater benefits to diverse and varied communities.

5.6 SUMMARY

This chapter presented and analysed the results of six pilot interviews with urban planners, elected

officials and community advocates. Key findings from the interviews were that these planners and advocates are seeking new, innovative urban planning solutions to the challenges that climate change presents in cities. Results suggest that community-based solutions are desired by the interviewees over top-down approaches as they enable a greater level of participation and community wellbeing. Political barriers to community participation also need to be removed or reduced to enable greater levels of innovation and engagement. Overall, the results suggest neither the Transition Movement nor the Smart Cities approach enable true ecological justice. However, with added rights and protections for non-human life, a community-based approach like the Transition Movement could be supported by data-driven Smart City innovations to foster a more inclusive urban planning environment with a greater level of ecological justice.

6 CONCLUSIONS

The need for new, innovative and fair approaches to urban planning, policy-making and climate change is clear. Contemporary cities and urban areas are already dealing with the complex impacts of climate change on natural systems, transport and infrastructure, food networks, and housing, among a variety of other economic, social and environmental challenges. As often densely populated centres of political, social and economic activity, cities are positioned in a powerful yet vulnerable place to face the immense challenges of a changing climate.

Against this challenging backdrop, this thesis examined the ways and the extent in which two approaches to urban planning and climate change – the Transition Movement and the Smart Cities approach – foster and advance ecological justice in contemporary urban environments. This question was examined through an in-depth literature review of ecological justice, examination of the two case studies, and six indicative pilot interviews with local leaders and community advocates.

As a relatively nuanced and underutilised concept, ecological justice was analysed in detail in chapter two of this paper, building on earlier understandings of environmental, procedural, recognitional and intergenerational justice to provide a more holistic understanding of ecological justice. The framework for ecological justice was developed building on the work of Dobson (2007a), Dobson and Eckersley (2006), Low and Gleeson (1998), and others. Three core principles of ecological justice emerged: recognition, participation and capabilities. When examining urban planning approaches to climate change, recognition requires us to put the problem in context, recognise the scale and urgency of the issue, and uphold the rights and protections of all life on this planet. Participation requires us to ask if all voices are being heard and question what interests may be being left out of the planning and policy process. A capabilities approach requires us to think about how these processes could be improved, and whether all forms of life and interest groups can flourish within environmental limits, reasonably, and with support.

The Transition Movement is a community-based approach to fossil-fuel reduction, localisation and climate change adaptation/ mitigation. While limited in its ethnic, socio-economic and geographic diversity, it provides a relatively easy way for citizens to become involved in environmental action that supports ecologically just outcomes. Conversely, the Smart Cities approach provides a more managed, top-down, technical style of urban planning and climate change adaptation/ mitigation. This data-driven method lacks community involvement but does have a stronger ability to shape system-level change in cities, which the Transition Movement does not. While both approaches foster and advance ecological justice at different levels, neither approach incorporates voice and

recognition for non-human animals. The indirect positive impacts on non-human life from the Transition Movement are more environmentally-focused in comparison to the Smart Cities approach, which tends to have a stronger focus on information-sharing and efficiency boosts.

These findings were supported by the community advocates and local leaders who were interviewed in this research. They collectively called for new, innovative or imaginative approaches to climate change. They expressed a strong desire for community-based solutions that incorporated all voices and fostered participation. Alongside these statements, participants also acknowledged the downsides of top-down approaches and called for fewer political restrictions around community-based sustainable action and transitional developments. The issues highlighted in this research, alongside other social and environmental planning challenges, could be approached using ecological justice as one method to help solve them. While ecological justice does not provide all the answers to climate change adaptation and mitigation in urban planning, the principles of ecological justice give planners, policy-makers and citizens the ability to evaluate the extent to which solutions are fair and just. This is vital to ensure all interest groups and communities are heard and nobody is left behind as the impacts of climate change worsen in urban environments.

The intersection between ecological justice, climate change and urban planning has been the primary focus of this research. While ecological justice requires considerable further research and development before it could be utilised on a large scale, this comparison of two urban planning approaches has demonstrated how the principles of ecological justice could be used to evaluate and plan the future of our cities and urban communities using a recognition, participation and capabilities framework.

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8 Appendix

8.1 Appendix A. Information Sheet for Interviewees



Urban Transitions for Justice

Information Sheet for Interviewees

Jacob Uden
Department of Political Science and International Relations
Ref: HEC 2018/77/LR

Dear <Interviewee>,

My name is Jacob Uden and I am studying towards a Master of Policy and Governance within the Department of Political Science and International Relations at the University of Canterbury, Christchurch. I am writing to you to ask if you would be interested and available to take part in an interview as part of my research on ecological justice in urban planning approaches that address climate change.

My research is focused on the intersection between climate change, urban planning and justice. I'm interested in examining the ways and extent to which Transition Towns Movement and Smart Cities shape just and fair outcomes for people and planet.

I would like to conduct a series of small interviews that should take no longer than 10-20 minutes with participants, activists, local leaders/ organisers and government officials. The interviews will be comprised of a series of four questions, as well as other questions and points that may arise during the interview. You are welcome to bring up other points and to direct the interview towards areas of your experience and knowledge.

With your permission, an audio recording will be made to supplement my written notes and prompt my memory later. You may request a copy of the transcript and you will be able to add or remove any information. Your identity will not be made public. With your approval, a pseudonym may be used when discussing results.

Participation is voluntary, and you have the right to withdraw at any stage without penalty. You

may ask for your raw data to be returned to you or destroyed at any point. If you withdraw, I will remove information relating to you. However, once analysis of the raw data begins in January 2019, it will become increasingly difficult to remove the influence of your data on the results. All data collected for this study will be kept in locked and secure facilities and/or in password protected electronic form and will be destroyed after five years.

The results of the project may be published, but you may be assured of the complete confidentiality of data gathered in this investigation. A thesis is a public document and will be available through the UCLibrary.

Please indicate to me on the consent form if you would like to receive a copy of the summary of the results of the project.

The project is being carried out as a requirement for the Master of Policy and Governance degree by myself under the supervision of my lead supervisor, Associate Professor Bronwyn Hayward, who can be contacted at bronwyn.hayward@canterbury.ac.nz. They will be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

If you are interested in participating in my research, I would be very grateful. You can contact me via email at jacob.uden@pg.canterbury.ac.nz.

If you agree to participate in the study, you are asked to complete the consent form and return to me at the address indicated on the form.

Thank you for considering this request.

Yours sincerely,

Jacob Uden
Master of Policy and Governance candidate

jacob.uden@pg.canterbury.ac.nz